Better Homes and Gardens®

WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE

SEPTEMBER 1993 • ISSUE NO. 63
Please display until September 13

What to know about buying 10" SAW BLADES
Page 40

CLAMP-STORAGE EXTRAVAGANZA
See page 58

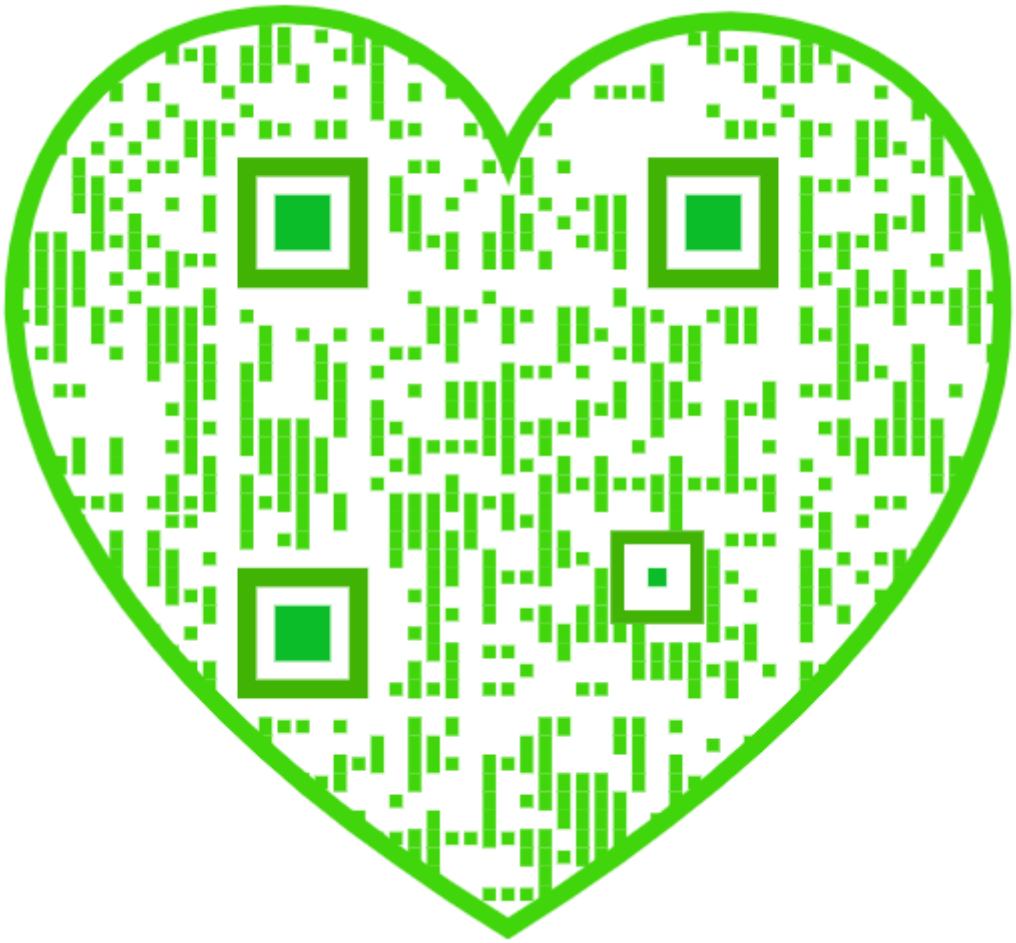
TOUGH-AS-NAILS EPOXY FINISHES

TOP CARVERS SHARE THEIR BEST TIPS

SUPER PROJECTS!
Bird feeder
Cherry spoon rack
Duck weathervane
Turned desk clock
Carved little guys
Plant hanger
Wildlife coatrack

BUILD THIS MISSION-STYLE
TALL CLOCK
FOR UNDER $200

09
$4.95
0 71486 14072 6



Grizzly IMPORTS, INC.

"IMPORTERS OF FINE MACHINERY"

LET'S CLEAR THE AIR!

Newly aware of the dangers of airborne dust, woodworkers in shops of all sizes are investing in dust collection systems. You should, too. These four popular models from Grizzly are extremely efficient and very quiet. So, why take chances with your health? Take advantage of these unbelievably low prices and enjoy a safer woodworking environment.

10th ANNIVERSARY

FREE
4" X 10' HOSE
WITH PURCHASE OF A DUST COLLECTOR!

MODEL G1032
- 1 H.P.
- 2-BAG
- 110 V
- 78 LBS.

ONLY $189.95

MODEL G1028
- 1 H.P.
- 2-BAG
- 110 V
- 125 LBS.

ONLY $265.00

MODEL G1029
- 2 H.P.
- 2-BAG
- 220 V
- 135 LBS.

ONLY $295.00

MODEL G1030
- 3 H.P.
- 4-BAG
- 220 V
- 170 LBS.

ONLY $455.00

PRICES ABOVE ARE F.O.B. WILLIAMSPORT, PA OR BELLINGHAM, WA

DUST COLLECTION ACCESSORIES

DUST COLLECTION BASICS

This incisive new book skillfully guides the woodworker through all the steps necessary in the design and construction of an efficient central dust collection system and tells you what you need to know for easy installation.

MODEL G2525
ONLY $5.95

PLASTIC BLAST GATES

MODEL G1842	3"	$4.95
MODEL G1843	4"	$5.95
MODEL G1844	5"	$9.95
MODEL G1845	6"	$10.95

ALUMINUM BLAST GATES

MODEL G1553	3"	$10.95
MODEL G1571	4"	$13.95

HOSE CLAMPS

MODEL G1795	3"	$.79
MODEL G1796	4"	$.89
MODEL G2484	5"	$.99
MODEL G2485	6"	$1.09

WIRE HOSE CLAMPS

MODEL G2972	2"	$.79
MODEL G2973	3"	$.89
MODEL G2974	4"	$.99
MODEL G2975	5"	$1.19
MODEL G2976	6"	$1.39

FLOOR SWEEP SYSTEM
MODEL G1840 $9.95

T

MODELG1546	3"	$4.50
MODEL G1547	4"	$5.95

Y

MODEL G1551	3"	$4.95
MODEL G1552	4"	$6.95

SPLICE

MODEL G2481	3"	$3.95
MODEL G2482	4"	$4.95

ELBOW — 90°

MODEL G1544	3"	$3.95
MODEL G1545	4"	$4.95

REDUCER

MODEL G2483 Reducer 3" x 2"	$3.95
MODEL G1519 Reducer 4" x 3"	$3.95

ADAPTOR
(for Shopvac® & Sears®)
MODEL G2551
Reducer 3" x 2-1/2" $4.95

2-1/2" UNIVERSAL DUST PORT
MODEL G2977
4" x 3-5/8" $5.95

UNIVERSAL DUST HOOD
MODEL G1838
7"x 7" $7.95

JOINTER DUST HOOD
MODEL G1839
6-1/2" x 6-1/2" $7.95
MODEL G1841
7" x 8-1/2" $8.95

TABLE SAW DUST HOOD
MODEL G1837
10" x 10" $9.95
MODEL G2480
14" x 14" $11.95

FLEXIBLE HOSE

MODEL G2867	2" x 10'	$9.95
MODEL G1674	3" x 10'	$11.95
MODEL G1678	3" x 50'	$49.95
MODEL G1536	4" x 10'	$14.95
MODEL G2868	4" x 20'	$29.95

93-102

P.O. BOX 2069
BELLINGHAM, WA 98227
Customer Service: (206) 647-0801

ORDERS:
1-800-541-5537

IF YOU LIVE **WEST** OF THE MISSISSIPPI

MasterCard VISA DISCOVER

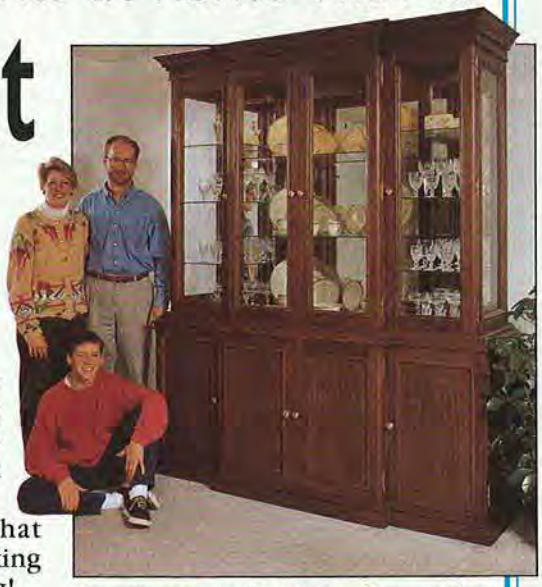
IF YOU LIVE **EAST** OF THE MISSISSIPPI

2406 REACH ROAD
WILLIAMSPORT, PA 17701
Customer Service: (717) 326-3806

ORDERS:
1-800-523-4777

THE EDITOR'S ANGLE

Dr. J. scores points at home with his Breakfront Hutch



Jim, Karen, and Joel Boelling gather proudly beside their new hutch.

Those of you who read *WOOD*® magazine regularly know that Jim Boelling (a.k.a. Dr. J.) builds the prototypes for most of the projects in the publication. So, you might think that he'd get his fill of woodworking during the week, right? Wrong!

This guy verges on the unbelievable; he always has something going, and it usually involves wood. He has built projects for his church and other charitable causes, and for hire. Plus, he's made numerous creations as gifts for family and friends.

His latest project, the striking walnut breakfront hutch, shown here, offers clear evidence that he's taking care of business at home, too. It took Jim about eight months, working on the hutch when he found a few spare hours, to get the job done. And he figures that he has over $1,800 worth of materials invested in it. Still, that's only a fraction of what this piece would cost at retail.

Where does he get all of his woodworking energy? I asked him one day, and he attributes much of his current activity to Karen, his wife of almost three years, and his son Joel. It turns out that in the future they're planning to build a new home, and as Jim says, "We're starting inside out—building the furniture first, and then the house."

Our resident woodworking expert also gives Karen credit for being a big help in actually completing their furniture pieces, expecially when it comes time to apply finish. "She's even taken the beginning woodworking adult-education class I teach to learn more about woodworking," Jim adds approvingly. Joel, on the other hand, played a key role during the assembly and construction stages of the hutch.

So what's up next on the Boelling after-hours woodworking agenda? Jim says he, Karen, and Joel plan to build a dining table and chairs that match the hutch, (and the sofa, end, and coffee tables completed earlier.) Phew! Talk about a woodworking machine. I can't wait to see what other projects Jim has up his sleeve in the years ahead.

Larry Clayton

Photograph: John Hetherington

SUBSCRIPTION SERVICE: For a change of address it is best for you to directly contact your local Postmaster who then will notify us. For any other service on your subscription, please write *WOOD* Customer Service, P.O. Box 55050, Boulder, CO 80322-5050 (enclose a recent label from your magazine for better service). Or you may phone toll-free 800-374-9663.
EDITORIAL MAILING ADDRESS: *WOOD* magazine, 1912 Grand Ave., Des Moines, IA 50309-3379. WE CARE!

WOOD PEN KITS
MAKE YOUR OWN PENS, PENCILS AND MORE!

Get started making your own pens!
STARTER PEN KIT $29.95 PPD.
Includes: Turning Jig for your lathe (requires drill chuck for mounting), 5 Pen Kits, 5 Exotic Wood Blanks.
Send $2.00 for our 56 page color catalog of woodturning supplies and accessories. Refunded with order.
Craft Supplies USA
1287 E. 1120 S. Provo, UT 84606
Phone 801 373-0917

Buy DIRECT from the Manufacturer and... SAVE!

NEW!
White Non-Loading SANDING BELTS

The Ultimate Woodworking BELT.
Buy 1-Doz. BELTS...Get 12 FREE!

1"x 30" (12 + 12 Free)	$18.50	4"x 21" (12 + 12 Free)	$25.75
1"x 42" (12 + 12 Free)	18.95	4"x 24" (12 + 12 Free)	26.95
3"x 21" (12 + 12 Free)	21.95	4"x 36" (12 + 12 Free)	32.95
3"x 24" (12 + 12 Free)	22.95	6"x 48" (6 + 6 Free)	40.95

(Available 60x, 80x, 100x, 120x, 150x, 180x). Try our NEW White Non-Loading Cloth in Discs, Wide Belts, Edge & Stroke Belts!

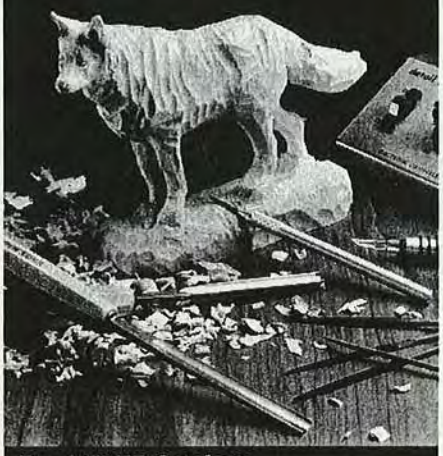
NEW! **Hook & Loop SANDING DISCS**
Buy any 3 (50 pks)...Get 4th pack FREE.

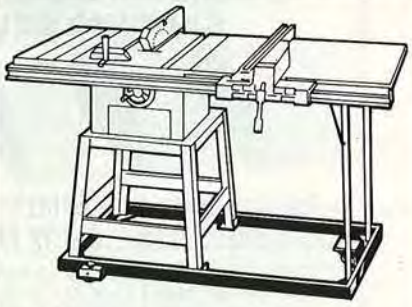
		80 GRIT	100 To 400 GRIT
4½"	(8 hole)	$13.95	$12.95
5"	(5 hole)	13.95	12.95
5"	(8 hole)	13.95	12.95
6"	(6 hole)	16.95	15.95
6"	(8 hole)	16.95	15.95

• All grits in solid packs of 50.
• Coarse grit sizes are available.

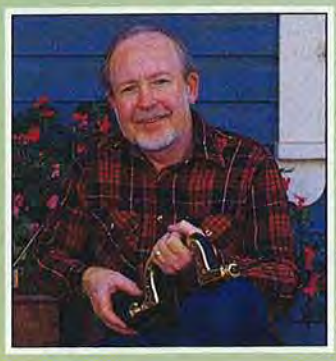
TOLL FREE **1·800·428·2222**
• S. &H. – $4.75
• PA residents add 6% sales tax.

INDUSTRIAL ABRASIVES CO.
643 N. 8th ST. • P.O. BOX 14955
READING, PA 19612

WOODCRAFT®
Pfeil
Swiss Made Carving Tools
The world's finest carving tools are available from one source - WOODCRAFT. Call or write today for a free copy of our catalog.
You'll Find:
•Pfeil Swiss Made Carving Tools
•Wood River Eye Punches
•Carver's Axes and Adzes
•Rick Butz Carving Knives
•Riffler Files
•Plus Much More!

For A FREE Catalog:
Call 1-800-542-9115 or Write:
Woodcraft Supply Dept. 93WI09S
PO Box 1686 Parkersburg, WV 26102-1686

Put Your Entire Shop On Wheels
MOBILE MACHINE BASES

• Increase your working area
• Store machines when not in use
• Hundreds of models available
• Precision welded steel construction
• Three 2-1/2" wheels for stability
• Dual wheel locks provide positive positioning
• Lifetime warranty
Call for a free catalog
MADE IN USA
HTC Products, Inc.
120 E. Hudson • P.O.Box 839
Royal Oak, Michigan 48068-0839
(800) 624-2027

Better Homes and Gardens®
WOOD®
THE WORLD'S LEADING WOODWORKING MAGAZINE
This issue's cover wood grain: Jelutong *Cover photograph: Wm. Hopkins*
SEPTEMBER 1993 ISSUE NO. 63



CRAFTSMAN CLOSE-UP
He makes old tools sing again 25
It seems only natural that Missourian Jim Price collects and uses antique tools, what with his advanced woodworking skills and Ph.D. in anthropology. Just how many old tools does he own? Try 25,000!

TURNING
Down-under desk clock 30
Give a new function and pleasing look to an unusual shape, the seed pod from the Australian Banksia tree. Find our seed source inside.

COVER STORY
Turn-of-the-century tall clock 32
You'll play The Price Is Right when you build this beautiful oak project. Imagine paying $200 or less for a full-sized tall clock!

DEVELOP YOUR SHOP SKILLS
Clean-as-can-be screw plugs 39
In five easy steps, learn how to make, install, and conceal wood plugs used for covering recessed screw heads.

TOOL BUYMANSHIP
10" carbide-tipped saw blades 40
Before you purchase your next 10" saw blade, see which blades make the cut and why in our in-depth roundup. We look at 32 models priced over $40.

Birds-and-such snack shop 46
Fill the hopper of this rustic bird feeder with tasty treats, and you'll have all of your fine feathered friends singing for their supper.

CARVING
Tips from the top 50
The pros know, and now you will, too, as 13 top-notch carvers offer better, more efficient ways for you to improve your hobby.

Wild kingdom coatrack 54
Choose among three intarsia patterns—a mallard duck, a colorful hummingbird, or a lovable panda bear—for this delightful project.

IDEA SHOP™
Clamp storage extravaganza 58
Organize your shop with one or more of the five special clamp holders featured here. You'll find holders for C-clamps and locking C-clamps, spring clamps, handscrews, and Quick-Bar clamps.

IN SEARCH OF THE PERFECT FINISH
Epoxy: As tough as nails and beautiful, too 62
Discover the secrets behind making and applying Wisconsin woodturner David Lory's lifetime-guarantee wood finish.

CRAFT SHOP
The plant hanger from paradise 64
Capture the lush beauty of the jungle with this leafy bracket, complete with a painted cockatoo.

Decorator duck 66
Try the full-sized patterns inside to make our pleasing shelftop waterfowl. It's a natural for outdoorsmen and those with country interiors.

A stirring display 68
Spoon collectors, spend an evening building this design, and you'll be rewarded with a showy rack that's perfect for accenting a kitchen or dining room.

CARVING
Little guy, lotta fun 70
Amuse your carving buddies with our thumb-sized caricature of—you guessed it—another carver.

SHORT-SUBJECT FEATURES

Editor's Angle	1	Commonsense Tool Kit	76
Talking Back	8	Products That Perform	78
Tips From Your Shop	14	Yesterday's Tools	82
Great Ideas For Your Shop	23	Ask *WOOD*	86
Rust Removal Made Easy	74	Wood Anecdote	91
		Finishing Touches	96

Take-Apart Reindeer Plans

This plan includes FULL SIZE patterns for ALL FOUR reindeer shown. Easy to make from 1-1/2 and 3/4 inch stock. Sitting Reindeer is approximately 17 inches high. Finished projects come apart for compact storage. Order hardware parts below.

#W910 Take-Apart Reindeer Plans....$7.99/SET

Take-Apart Reindeer Hardware Parts

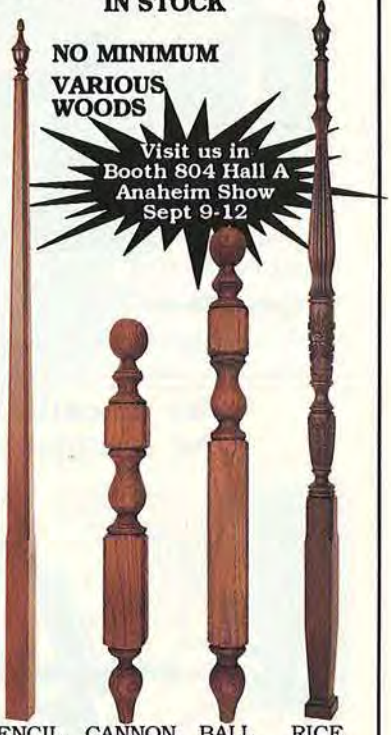
You get four pair of reindeer eyes, 4 red pom pom noses, 4 red ribbon bows, 8 jingle bells and 4 screw eyes. Order one parts package to make 4 reindeer. Project plan, wood, and wood finish are **not included.**

#1227 Take-Apart Reindeer Hardware Parts $5.96/PKG

HOW TO ORDER: List quantity, part number, item, price & total of order. Include $4.95 shipping & handling per order. MN residents add 6.5% sales tax. Mail check or money order. **Credit card customers call TOLL FREE 1-800-441-9870.**

MEISEL HARDWARE SPECIALTIES
P.O. BOX 70 W10X MOUND, MN 55364

BED POSTS
IN STOCK



NO MINIMUM
VARIOUS WOODS
Visit us in Booth 804 Hall A Anaheim Show Sept 9-12

PENCIL CANNON BALL RICE

FREE COLOR CATALOGUE

Adams Wood Products, Inc.
974 FOREST DRIVE - DEPT. M-21
MORRISTOWN, TENNESSEE 37814
TELEPHONE 615-587-2942 FAX 615-586-2188

STEVE WALL LUMBER CO.
Quality Hardwoods and Woodworking machinery For The Craftsman and Educational Institutions

STEVE H. WALL LUMBER CO.
BOX 287 • MAYODAN, N.C. 27027
919-427-0637 • 1-800-633-4062 • FAX 919-427-7588

Ash	4/4	Select	2.10		$ 64.00
Basswood	4/4	Select	1.50		$ 52.00
Birch	4/4	Select	2.10		$ 64.00
Cherry	4/4	Select	2.75		$ 78.00
Cypress	4/4	Select	1.85		$ 57.00
Hickory	4/4	Select	1.75		$ 55.00
Mahogany (Genuine)	4/4	Select	2.85		$ 78.00
Maple (Hard)	4/4	Select	2.15		$ 65.00
Maple (Soft)	4/4	Select	1.60		$ 52.00
Pecan	4/4	Select	1.75		$ 55.00
Poplar	4/4	Select	1.45		$ 50.00
White OR Red Oak	4/4	Select	2.20		$ 64.00
Walnut	4/4	Select	2.95		$ 79.00
Cedar (Aromatic Red)	4/4	1C+Btr.	1.50		$ 51.00
White Pine	4/4	FG.	1.05		$ 42.00
Yellow Pine	4/4	Clear	1.40		$ 50.00

Above prices are for 100' quantities of kilndried rough lumber sold by the Bd. Ft. FOB Mayodan, NC. Call for quantity discounts. Other sizes and grades available.

UPS Specials

Above prices are 20 bd. ft.bundles of clear kilndried lumber 3"-10" wide • 3'-7' long (Random widths & lengths) Surfaced 2 sides or rough. Delivered UPS prepaid in the Continental U.S.

LUMBER SPECIALS

MAHOGANY
100 Bd. Ft. Bundle #1 Common S2S 13/16
$175*

CHERRY
100 Bd. Ft. Bundle 4/4 Log Run $95*

(*FOB Mayodan Motor Freight Only)

Send $1.00 For Lumber Catalog

Free Workshops • Prizes • Hundreds of Products • Seminars by Mastercraftsmen

See the Widest Variety of Woodworking Products All Under One Roof!!

★THE WOODWORKING SHOWS★
machinery • tools • supplies

FREE BROCHURE!

1993/1994 SHOWS

• Arizona	• Columbus	• Milwaukee	• So. California
• Atlanta	• Delaware Valley	• New Jersey	• St. Louis
• Baltimore	• Denver	• No. California	• Tampa
• Buffalo	• Detroit	• Pittsburgh	• Twin Cities
• Charlotte	• Indianapolis	• Portland	• Virginia
• Chicago	• Kansas City	• Seattle	• Washington, D.C.

Call for free brochure Monday - Friday 8 am - 5 pm Pacific Time
1-800-826-8257 or 310-477-8521

POCKET HOLES AREN'T JUST FOR FACE FRAMES ANYMORE

K-2 with step drill & collar $119.95.

From cabinets to crafts and everything in between. Professionals or hobbyists. If you want to make your wood joints faster, easier and more fun, try the patented **Kreg Jig**® in your shop. **30-day no risk guarantee. Try it, you won't be disappointed.**

The Kreg Jig®
MADE IN THE USA

KREG TOOL COMPANY • BOX 367 • HUXLEY, IA 50124 • **800-447-8638**

The Excalibur T-Slot Saw Fence and Companion Sliding Saw Table

EXCALIBUR

DESIGNED AS A COMPLETE SYSTEM TO PROVIDE YOU GREATER ACCURACY FROM YOUR TABLE SAW

NO RISK TRIAL PERIOD–LIFETIME GUARANTEE

- Quick, Easy Installation. Fits all Table Saws.
- Fence Locks on Both Front & Rear Guide Rails.
- Fence always stays Parallel to the Saw Blade

- Sliding Table
- –Cross-cut
- Stock up to 60" wide.
- Dual Measuring Scales. Accurate Cuts Guaranteed.
- More Features and Accessories than other Systems.

If you have access to a FAX machine and wish to receive immediate information, call (800) 361-8015 x710 and leave FAX number.

Excalibur Machine & Tool Co.
210 Eighth Street South
Lewiston, NY 14092
416-291-8190

Better Homes and Gardens® WOOD®
THE WORLD'S LEADING WOODWORKING MAGAZINE

September 1993 • Vol. 10, No. 6 • Issue No. 63

Editorial/Art Staff

Editor **LARRY CLAYTON**
Managing Editor **JIM HARROLD**
Art Director **C. L. GATZKE**
Associate Art Director **PERRY A. McFARLIN**
Design Editor **JAMES R. DOWNING**
Senior Editor **PETER J. STEPHANO**
How-To Editor **MARLEN KEMMET**
Products/Techniques Editor **BILL KRIER**
Special-Interest Editor **LARRY JOHNSTON**
General-Interest Editor **TOM JACKSON**
Graphic Designer **CHERYL A. CIBULA**
Project Builder **JAMES E. BOELLING**
Production/Office Manager **DARLENE REYNOLDS**
Administrative Assistant **MARGARET CLOSNER**
Correspondence Writer **DON MOSTROM**

Technical Illustrator **KIM DOWNING**
Technical Consultants: Product Testing **GEORGE GRANSETH, BOB McFARLIN.** Collectible Tools **PHILIP WHITBY.** Carving **HARLEY REFSAL.** Projects **CHUCK HEDLUND.**

Publisher **WILLIAM R. REED**
Marketing/Advertising Director **CHRIS W. SCHRAFT**
Marketing/Sales Manager **DONNA BREHM**
Advertising Representatives **BRENDEN DELANEY, VICTORIA PELCYGER**
Marketing/Advertising Services Manager **SIGRID FOLKERS**
Marketing/Advertising Services Supervisor **PAT HENDERSHOTT**
Assistant Product Manager **DARCY SHAW**
ADVERTISING OFFICE: 1912 Grand Avenue, Des Moines, IA 50309. Phone 515/284-3670.

Circulation Manager **ALAN BRUSH**
Business Manager **JANET NELSON**
Newsstand Circulation Director **MICHAEL SENIOR**
Production and Technology Director **ROBERT C. FURSTENAU**

Magazine Group Officers

President **WILLIAM T. KERR.** Vice Presidents/Publishing Directors **MYRNA BLYTH, CHRISTOPHER LEHMAN, CHRISTOPHER LITTLE, JOHN LOUGHLIN, ROBERT MATE, JERRY WARD.** Vice Presidents, Better Homes and Gardens **JERRY KAPLAN, JEAN LEMMON.** Vice President, Operations **DEAN PIETERS.** Vice President, Finance **MAX RUNCIMAN.** Vice President, Director of New Product Development **DAVID JORDAN.** Vice Presidents, Marketing **WILLIAM MURPHY, CLEM SEVDE.** Vice President, Circulation **HAL ORINGER.**

Corporate Officers

Chairman of Executive Committee **E.T. MEREDITH III**
Chairman of the Board, President, and Chief Executive Officer **JACK D. REHM**
Group Presidents: Books **JOSEPH J. WARD.** Broadcasting **PHILIP A. JONES.** Magazines **WILLIAM T. KERR.** Real Estate **ALLEN SABBAG.**

Better Homes and Gardens® *WOOD®* (ISSN-0743-894X) is published nine times a year in January, February, April, June, August, September, October, November, and December by Meredith Corporation, 1716 Locust St., Des Moines, IA 50309-3023. Second-class postage paid at Des Moines, Iowa, and at additional mailing offices. Better Homes and Gardens trademark registered in Canada and Australia. Marca Registrada en México. **ONE-YEAR SUBSCRIPTION PRICES:** U.S. and its possessions, $25; Canada, $34; other countries, $43. **POSTMASTER:** Send address changes to *WOOD*, P.O. Box 55050, Boulder CO 80322-5050. ©COPYRIGHT MEREDITH CORPORATION 1993. ALL RIGHTS RESERVED. PRINTED IN U.S.A. Canadian GST Reg. #R123482887.

MPA

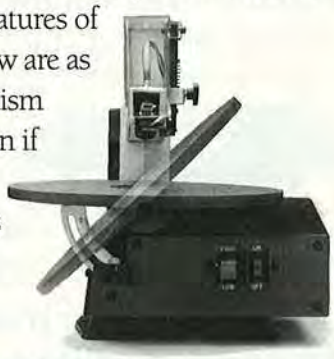
What it takes to cut it as a Consumers Digest Best Buy.

You don't get named a *Consumers Digest* Best Buy without working at it. You have to be an *outstanding* value. That's the Dremel 1671 Scroll Saw.

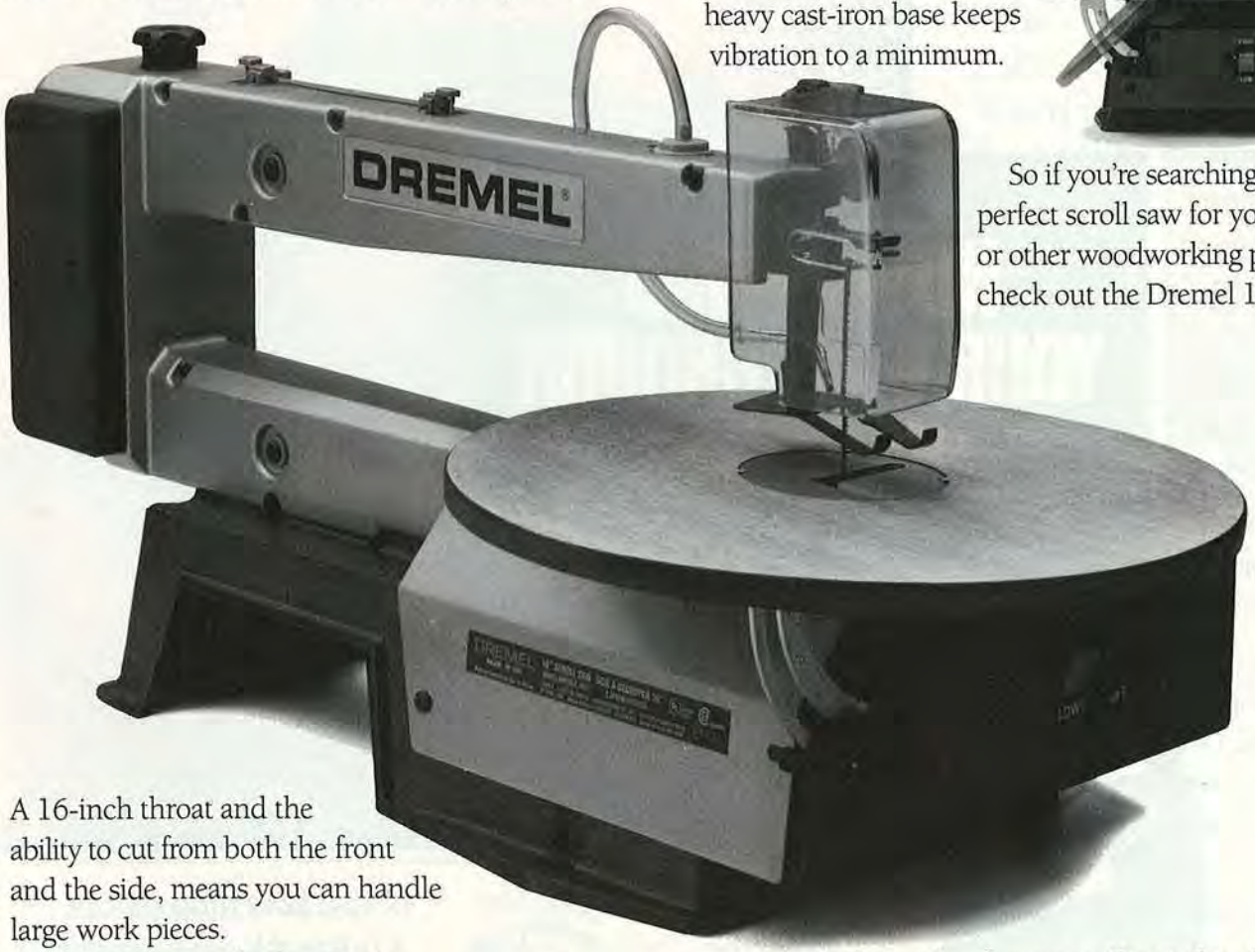
The Dremel 1671 has a lot of features that make it a pleasure to use. It has two cutting speeds and a powerful motor that lets you buzz through wood up to two inches thick, as well as sheet metals and plastics.

The sturdy, 12-inch cast aluminum table is adjustable from 0° to 45° for accurate bevel cuts up to 1-inch thick.

Of course, not all the features of the Dremel 1671 Scroll Saw are as obvious. A special mechanism quickly stops cutting action if the blade breaks. And the heavy cast-iron base keeps vibration to a minimum.

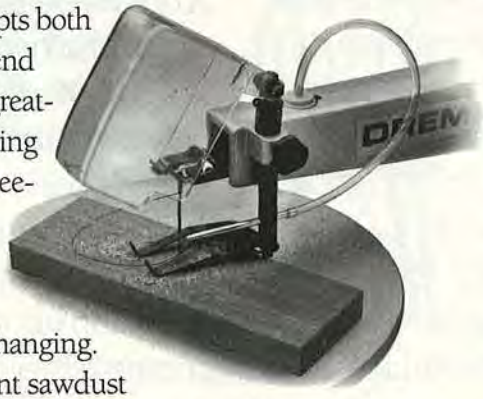


So if you're searching for the perfect scroll saw for your craft or other woodworking projects, check out the Dremel 1671.



A 16-inch throat and the ability to cut from both the front and the side, means you can handle large work pieces.

The saw accepts both plain- and pin-end blades, for the greatest possible cutting versatility. The see-through blade guard pivots out of the way for easy blade changing. And a convenient sawdust blower keeps your cutting line clear for accurate cuts.



And see why *Consumers Digest* placed it a cut above the rest.

For a free copy of the *Dremel Scroll Saw Blade Application Guide* write to: Dremel, Dept. S-W, P.O. Box 1468, Racine, WI 53406-1468.

CONSUMERS BEST BUY DIGEST DREMEL 1671 SCROLL SAW

DREMEL®

HOW TO FIND YOUR WAY THROUGH THE WOODS.

In woodworking, every project is an adventure. You explore the wood, studying its grain, searching for something hidden within. Your goal is to emerge, weeks later, with a proud souvenir. A planter. A Shaker chair. Or perhaps a rustic chest of drawers.

Ironically, the ease of any woodland journey depends largely on a decision you make *before* embarking: your choice of tools. To this end, a move in the right direction is Skil Woodshop Tools.™

Skil Woodshop Tools are a full line of woodworking tools designed to make any project a pleasure.

Every step of the way.

Enter the woods with a confident first cut on the 3400 10″ benchtop tablesaw. Its powerful 13.0 amp motor and the exclusive Accu-Lign™ self-aligning, quick-set rip fence makes short work of sizing raw stock.

Afterward, smooth off cuts and round corners with the 3370 combination 4″ belt/6″ disc benchtop sander. A quick-release belt adjustment (another Skil exclusive) lets you effortlessly switch between vertical and horizontal bed positions.

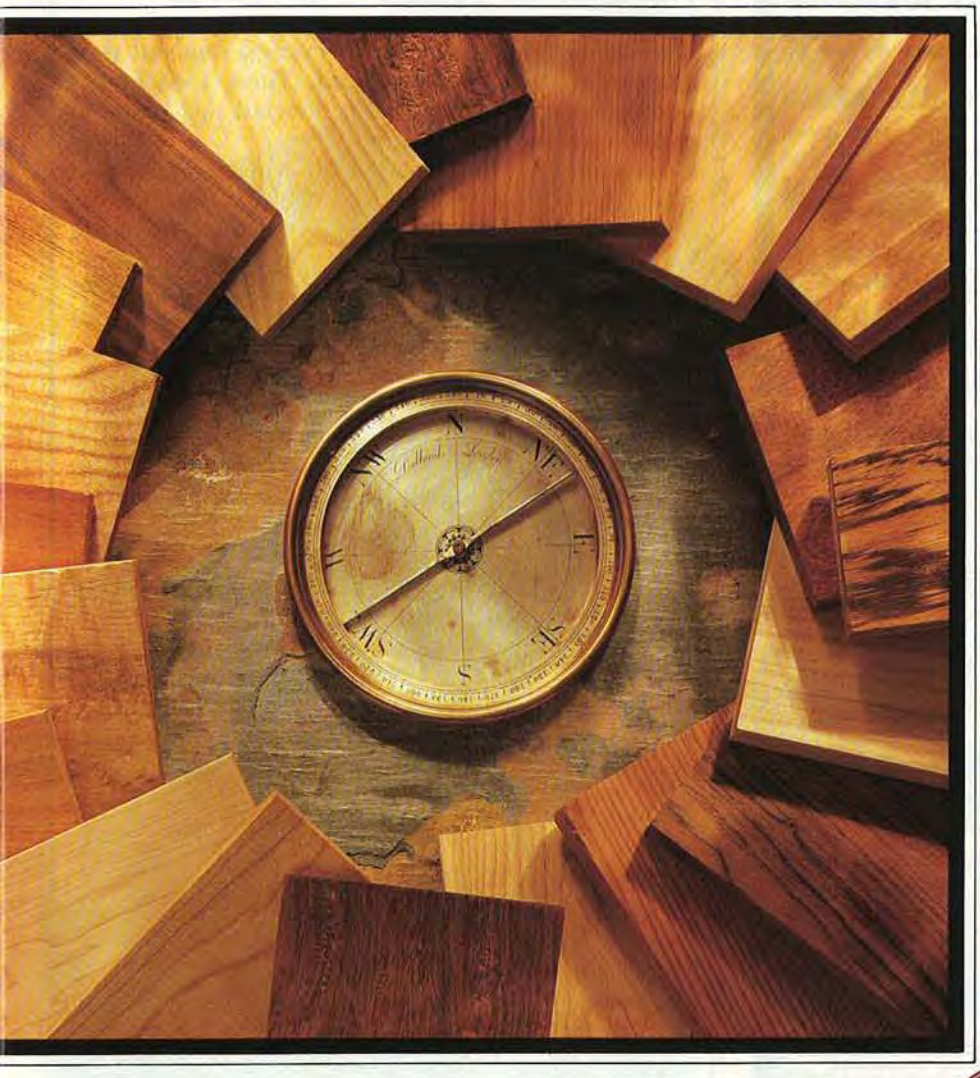
If your plans call for intricate cuts, use the 3330 16″ benchtop scroll saw. It accepts either plain or pin-

©1993 S-B Power Tool Co., 4300 W. Peterson Ave., Chicago, IL 60646.

end blades and comes with a built-in blade length gauge for quick setting. Plus, to keep

of vari-orbit, auto scroll and straight-line cutting modes, it offers more options than any other jigsaw.

And for accurate, repetitive drilling, the 3380 benchtop



your cutting path clean,

it has a high-velocity dust blower.

To navigate tricky interior cuts, there's the 4395 jigsaw. With a choice

drill press is precisely what you need. The depth measurement and sturdy, adjustable table guarantee consistency from first hole to last.

Of course, you could just let your imagination run wild with the HD 1875 plunge router.

The 2¼ hp motor carves signs, cuts joints and trims

decorative edges with power to spare.

When it's time for assembly, try the innovative HD 1605 plate joiner. Simply cut matching slots, pop in a wooden biscuit, glue and you have yourself a quick, durable joint.

Once it's all together, give your project a once over with the HD 7576 palm grip sander. The 7576 performs an exacting 1/16" orbit 13,000 times a minute for a fast finish.

Next time you explore the woods, bring along the perfect traveling companions—Skil Woodshop Tools. You'll find those shown here and other Woodshop tools in stores everywhere. Just look for this label.

SKIL WOODSHOP TOOLS

It's a sure sign you're on the road to woodworking success.

SKIL®

CASCADE TOOLS, INC.

The Best in Carbide Cutting Tools

1/4" STRAIGHT DOUBLE FLUTED — ONLY $6.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C
C1001	1/4"	3/4"	2"

1/4" RADIUS ROUNDOVER — ONLY $11.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r
C1177	1"	1/2"	2"	1/4"

1/4" SPIRAL SOLID CARBIDE — ONLY $15.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C
C1443	1/4"	3/4"	2"

3/8" COVE — ONLY $14.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r
C1143	1-1/4"	5/8"	2-1/8"	3/8"

3/8" KEYHOLE SINGLE FLUTE — ONLY $8.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C
C1359	3/8"	1/2"	2"

RABBETING BIT WITH BEARING GUIDE — ONLY $12.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C
C1043	1-1/4"	1/4"	2"

1/2" DOVETAIL 2 FLUTES — ONLY $5.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	ANGLE a
C1069	1/2"	1/2"	1-3/4"	14°

ROMAN OGEE 2 FLUTES WITH BEARING GUIDE — ONLY $18.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r
C1154	1-1/2"	3/4"	2-1/4"	1/4"

1/2" FLUSH TRIM — ONLY $8.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C
C1080	1/2"	1-3/16"	2-3/4"

5/32" SLOT CUTTER — ONLY $22.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r
C1098	2"	5/32"	2-1/4"	9/16"

45° CHAMFER — ONLY $15.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C
C1129	1"	7/16"	2"

3/8" CORE BOX — ONLY $14.00

PART	1/4" SHANK CUTTER DIA. A	CUTTING LENGTH B	OVERALL LENGTH C	RADIUS r
C1230	3/8"	7/16"	1-3/4"	3/16"

ORDER 24 HOURS A DAY!

MasterCard VISA **1-800-235-0272 EXT. 32**

NEW **TOLL FREE FAX: 1-800-392-5077**

$4.50 SHIPPING CHARGE ON ORDERS LESS THAN $100.00

93C-111

TALKING BACK

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Talking Back, Better Homes and Gardens® *WOOD*® magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

Print this article

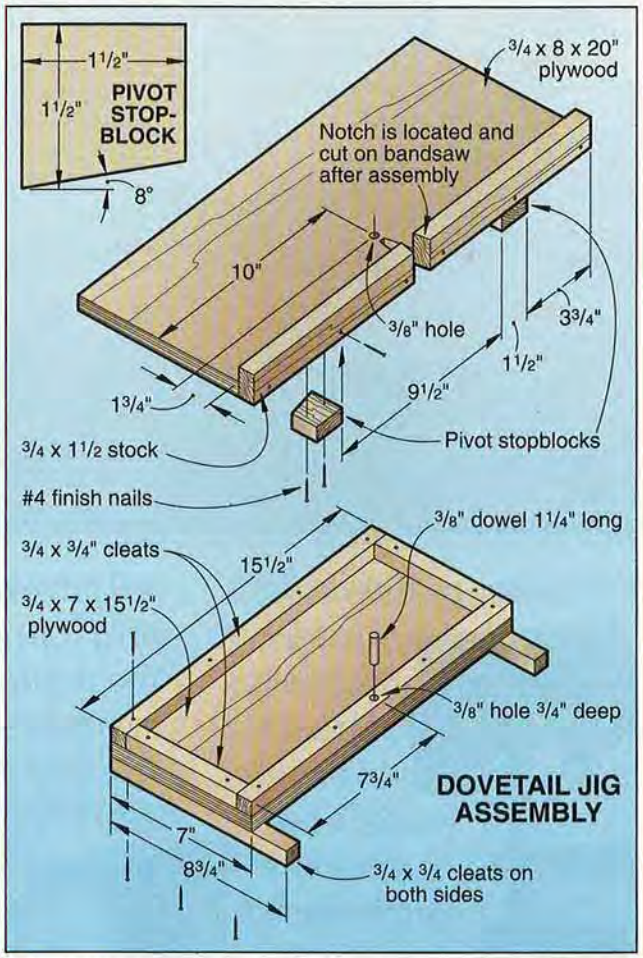
Heads-up spin-off on our dovetail jig

When I received your April 1992 issue and the plan for the bandsaw jig for cutting dovetail pins (*page 49*), I had to make one. Then, I decided I could use your [tilting-table dovetail jig] plans to make a jig to cut the tails.

I made a base support with a flat surface and placed a pivoting table on top that lets you turn the table (and workpiece) left or right, like a mitre gauge. Using this jig system, I can cut the tails the same way as the joining pins by angling the table as needed, and sliding the workpiece back and forth to clean out the waste. It works great!

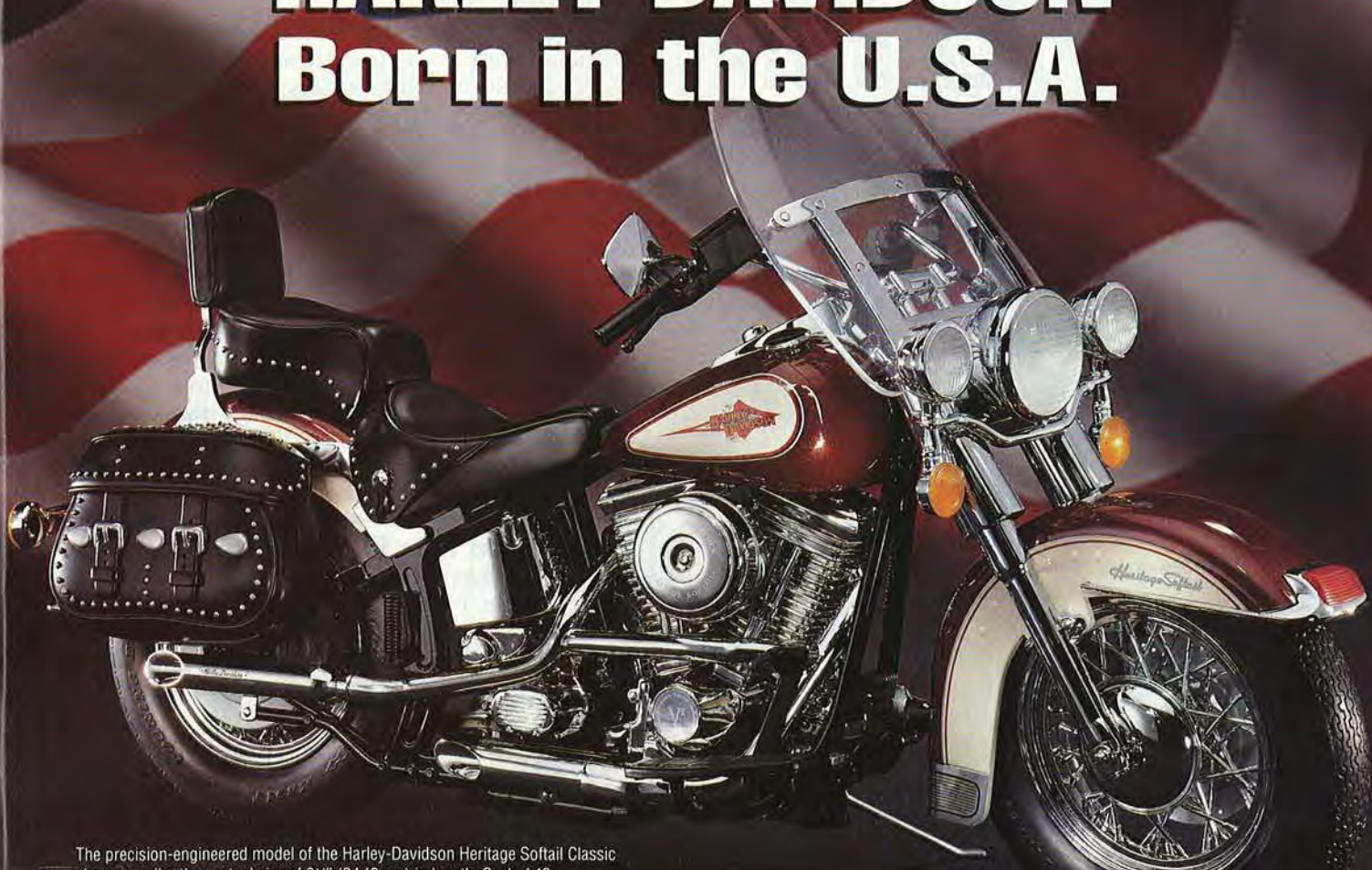
—Marvin Hall, Edwardsville, Ill.

Marvin, we built your jig in the shop and found it does a fine job cutting tails. We include it below *so our other readers can give it a try.*



continued on page 10

HARLEY-DAVIDSON®
Born in the U.S.A.



The precision-engineered model of the Harley-Davidson Heritage Softail Classic shown smaller than actual size of 9½" (24.13 cm) in length. Scale 1:10.

HARLEY-DAVIDSON presents the first and only official die-cast replica of The Heritage Softail® Classic.

DETAIL FOR DETAIL AS AWESOME AS THE ORIGINAL. It is the Great American Freedom Machine. And it is re-created with unprecedented accuracy by Franklin Mint Precision Models.

From the classic "Fat Bob"® fuel tank to the wide-eyed Halogen headlights and spit'n polish head-lamp assembly. Handlebars actually turn the front wheel, shifter lever pivots and the seat

rides up and down on its own functional Softail suspension system. It's the ultimate die-cast model of the definitive "Wild Th'ang." Yet, civilly priced at just $135, in monthly installments.

Satisfaction Guaranteed

If you wish to return any Franklin Mint Precision Models purchase, you may do so within 30 days of your receipt of that purchase for replacement, credit or refund.

Guaranteed Christmas Delivery

ORDER FORM

Please mail by September 30, 1993 for Guaranteed Christmas Delivery.

Franklin Mint Precision Models
Franklin Center, PA 19091-0001

Please send me my precision-engineered replica of the Harley-Davidson® Heritage Softail® Classic, fully assembled and ready for display.

I need **SEND NO MONEY NOW**. Prior to shipment of my imported die-cast model, I will be billed for a deposit of $27.* and after shipment for the balance in 4 equal monthly installments of $27.*

*Plus my state sales tax.

SIGNATURE _____
ALL ORDERS ARE SUBJECT TO ACCEPTANCE

MR/MRS/MISS _____
PLEASE PRINT CLEARLY.

ADDRESS _____ APT. # _____

CITY/STATE _____ ZIP _____

TELEPHONE # (_____) _____

© 1993 FMPM

14923-8BYK-253

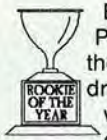
The Harley-Davidson Heritage Softail Classic. Exclusively From Franklin Mint Precision Models.®

PERFORMAX'S "ALL STAR LINE-UP"

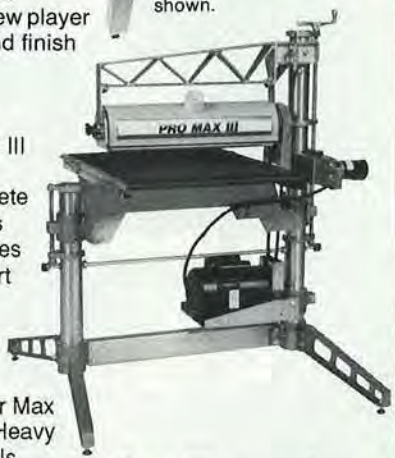
Add a Proven Player to your shop.

Our Lead-off Hitter, the Performax S/T Sander and Power Feed, adds fine-finish sanding capacity to your radial arm saw. The affordable price is an unbeatable value.

Mount to your workbench or Optional Stand shown.

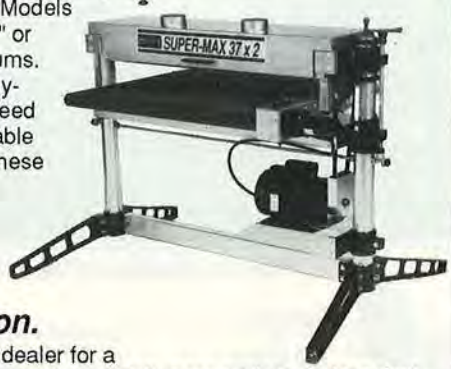


Bat 1.000 with the PERFORMAX 16-32 — the world's first benchtop drum sander. The 16" wide cantilevered drum will sand 32" wide in two passes. This new player will surface, dimension and finish sand.



The PRO MAX III earns the MVP award. This complete player covers all the bases with its ability to sand pieces as wide as 44" and as short as 2 1/4".

The Super Max models are our Heavy Hitters. Models offer 25" or 37" single or dual drums. 5 HP motors, infinitely-variable conveyor speed and an easily-adjustable second drum make these models major league producers.



Make this a winning season.

See Your Performax dealer for a demonstration on how you can finish more projects in less time. Call for player stats to sign on the player that is right for you.

1-800-334-4910 or (612) 895-9922
or write: ***PERFORMAX PRODUCTS,*** WD09
12211 Woodlake Dr., Burnsville, MN 55337

TALKING BACK

Continued from page 8

Rolling benches take his breath away

When I came to your "Home Workshops that Work" article in issue 60, *page 65*, my breathing almost stopped when I read the proud declaration, "I eliminated the wide-spread legs that were furnished with the tablesaw, 6" sander, and radial-arm saw. Now, I have wheels under all those machines." Wheels! This gives me the horrible vision of an operator wrestling with an ungainly workpiece atop a tipsy, rolling machine with whirring blades and cutters!

It seems irresponsible to neglect the potential for disaster. Shouldn't some safety warning be made on this subject?

—Herb Tutherly, Windsor, Conn.

Good point, Herb. However, we do mention that all of Ivan James' mobile bases have locking casters.

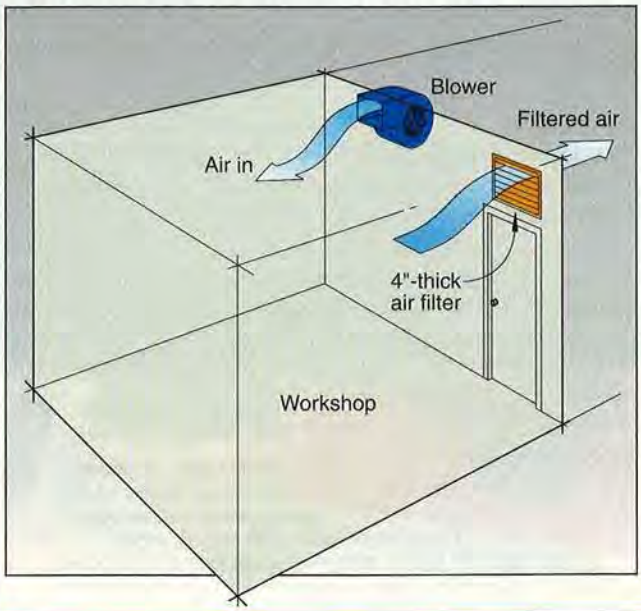
Furnace fans help fight bad air

I had a bad dust problem and decided to do something about it. I studied all of your dust-control systems and came up with an idea. I found some squirrel-cage furnace fans that worked well and mounted them at two locations on joining walls. I then placed air filters in the walls at two separate locations away from the fans.

The furnace fans continually "charge" the room with fresh air forcing the old air through the filters, trapping all that fine dust. It works great, and the cost is minimal.

—Carvel Metz, Delphos, Ohio.

Carvel, you hit upon a pretty practical idea. Depending on room size, you should also get satisfactory results using just one wall-mounted squirrl-cage fan and one 4"-thick air filter. See below.



"Darkhouse Decoys" draws cheers

Until your excellent article on carver Ray Zelinski (issue 60, *page 35*), I thought we fish decoy carvers were the poor relation of the better-known duck makers. Now everyone can appreciate their beauty, craft, and utility. William Hopkins and Jerry Irwin did a super job. More, more, more!

One point: To avoid having my decoys "aged" and resold as antiques, I carve or burn my mark on the underside of each fish I make. I know fish decoy collectors appreciate this. It also helps to identify my style and it enhances sales of my fish to folk art collectors and decorators who like things "signed by the artist."

—R.L. Frankenberger, Ph. D., Macomb, Ill.

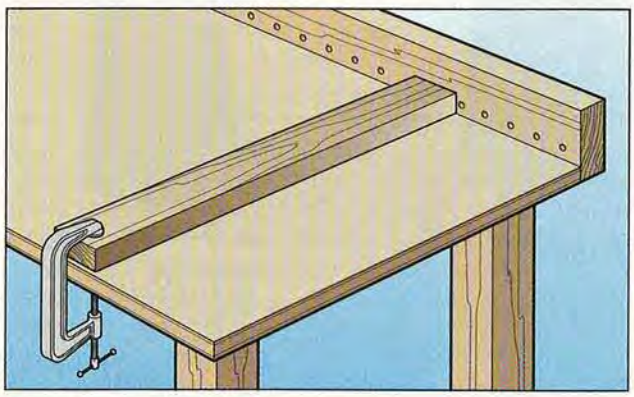
Improved bench clamp

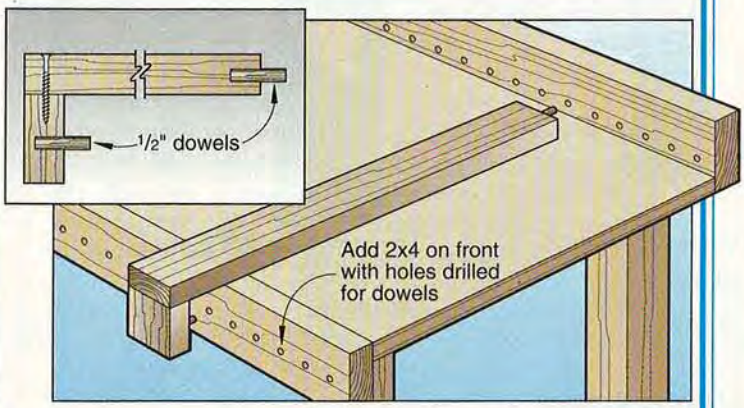
I came up with an improvement to a bench clamp you published in your December 1992 issue (*page 20*). I felt your clamp anchored the bench stop in an awkward manner. My design eliminates the clamp by using dowels to anchor both ends of the stop rather than only one end as yours did.

This method makes moving the stop much quicker and easier by always maintaining a 90° base to work from.

—Leonard Flowers, St. Louis, Mo.

Freud Red
Maximum Safety
Maximum Performance
THE NEW FREUD ANTI-KICKBACK ROUTER BIT LINE
SAFETY FIRST
Freud is the first major manufacturer dedicated to converting their full line of router bits to the anti-kickback design. Our anti-kickback design limits the cutters' bite to insure a smooth and safe cut, without holding back on speed. Unlike other so-called "anti-kickback design bits", Freud's are manufactured to meet one of the most rigid safety standards in the world: The German Industry standard, DIN 8085 and DIN 31000.
SUPERIOR FINISH
Our bits give you the smoothest, most burn-free and chatter-free cuts available. To do this, we custom designed a special computer-controlled grinder to provide the proper relief angles that eliminate the burning associated with the radial type of relief. This equipment gives each tool a mirror-finish cutting surface that starts sharper and stays sharper longer.
THICK CARBIDE TIPS
Our micrograin carbide tips are up to .094" thick. This makes them less prone to chipping and insures a long resharpening life. We use a tri-metal brazing to mount the carbide tips to the bit body; silver, copper and silver brazing absorbs heat and impact.
COMPUTER BALANCED
We computer balance all of our bits for precision cuts and vibration-free operation every time. Even our larger bits leave a chatter-free, silky-smooth finish.
FULL LINE LIFETIME GUARANTEE
How can a company prove that they truly have a superior product? By putting their money where their mouth is! We back our complete line of router bits with a LIFETIME GUARANTEE*.
TOTAL QUALITY COMMITMENT
At Freud, quality is a lifestyle and not just a sales promise. Our commitment is to produce the world's highest quality bits. By our continual investment in the best technology, you can be sure you are getting a quality product.
EXTENSIVE LINE
We have one of the most extensive lines of carbide router bits available and we're growing daily. If you're looking for an unusual bit, give us a call, chances are pretty good that we have it.
RATED EXCELLENT BY THE PROS
In a recent survey by Hanley-Wood, the majority of readers who were familiar with Freud ranked our products as excellent!
NEED MORE INFORMATION?
Just call one of our dealers, they are ready to answer your questions. Don't forget to ask for one of our new 92 page router bit catalogs. If you need the name of a dealer near you, give us a call.
Popular Woodworking
Readers' Choice Awards
freud®
Precisely what you need.
High Point, NC • 800-472-7307
*Does not constitute entire warranty. For a complete copy of our Freud warranty, please send a self-addressed envelope to: Freud Inc./ P.O. Box 7187, High Point, NC 27264





Continued on page 13

10" TABLE SAW

***EN-TB10**
- 1-1/2HP 110/220V
- CAST IRON TABLE

REG: $350.00
SPECIAL: $335.00

WOOD SHAPER

***EN-WS05**
- 1HP 16 AMPS 110V
- REVERSIBLE MOTOR
- CAST IRON TABLE
- 1/2" SPINDLE

REG: $280.00
SPECIAL: $265.00

HEAVY DUTY WOOD SHAPER

***EN-WS10**
- 3HP 22 AMPS 220V
- 3/4"+1" SPINDLES
- 3" SPINDLE TRAVEL (1/2" SPINDLE AVAILABLE)

REG: $860.00
SPECIAL: $845.00

16" BAND SAW

***EN-BS16**
- 1-1/2 HP 110/220V 3 SPEEDS
- CAST IRON TABLE
- RIP FENCE & MITRE GAUGE INCLUDED

REG: $520.00
SPECIAL: $490.00

18" HEAVY DUTY BAND SAW

***EN-BS18S**
PRICE: $645.00

10" HEAVY DUTY TABLE SAW

***EN-HTB10**
- 3HP 220V
- TRIPLE V BELT DRIVE, 5/8" ARBOR
- SOLID CAST IRON TABLE+WINGS
- PRECISION FENCE + MITRE GAUGE

REG: $1,190.00
SPECIAL: $1.135.00

18" SUPER HEAVY DUTY BAND SAW

***EN-BS18**
- 2HP 110/220V 11 AMPS 220V
- 3,300 FPM BLADE SPEED
- RIP FENCE & MITRE GAUGE INCLUDED

REG: $910.00
SPECIAL: $880.00

12" PLANER

EN-PN12
- 2HP 16 AMPS 110V 16,000 CPM
- 2 BLADE CUTTERHEAD
- 26.2 FPM FEED RATE

REG: $380.00
SPECIAL: $355.00

6" X 9" BELT/DISC SANDER

***EN-SN69**
- 3/4 HP 110/220 V
- 6" X 48" BELT,9" DISC
- TABLE TILTS: 0°-45°, BELT: 0°-90°
- WITH GAUGE

REG: $195.00
SPECIAL: $185.00

15" PLANER

***EN-PN15**
- 2HP 110/220V 15 AMPS 220V
- 2 SPEEDS, 13,500 CPM
- 3 BLADE CUTTERHEAD
- STAND INCLUDED

PRICE: $795.00

22" SCROLL SAW

EN-SC22
- 1/8HP MOTOR
- SINGLE SPEED 1,725 SPM
- 22" THROAT, 2" MAX CUT

REG: $150.00
SPECIAL: $145.00

3H.P. DUST COLLECTOR

***EN-DC30**
- 3 HP 220 V 22AMPS
- 1850 CFM
- INTAKE HOLES: 3 @4"

REG: $455.00
SPECIAL: $450.00

6" JOINTER

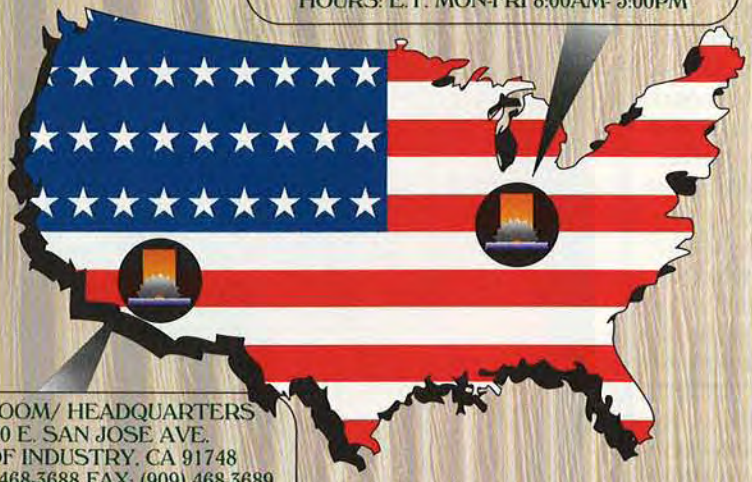
***EN-J006**
- 1HP 110/220V 14 AMPS 110V
- CAST IRON TABLE
- 13,500 CPM
- 3 BLADE CUTTERHEAD

REG: $340.00
SPECIAL: $300.00

8" HEAVY DUTY JOINTER

***EN-J008**
REG: $675.00
SPECIAL: $635.00

SHIPPING WAREHOUSE/ SERVICE CENTER
12 ARMORY ROAD, CLARKSBURG, WV 26301
HOURS: E.T. MON-FRI 8:00AM- 5:00PM



SHOWROOM/ HEADQUARTERS
19400 E. SAN JOSE AVE.
CITY OF INDUSTRY, CA 91748
TEL: (909) 468-3688 FAX: (909) 468-3689
HOURS: P.T. MON-SAT 8:00 AM-5:00PM

ENLON™

ORDERS 1•800•888•9697

Pacific Time: Mon-Sat 7:00am to 5:00 pm

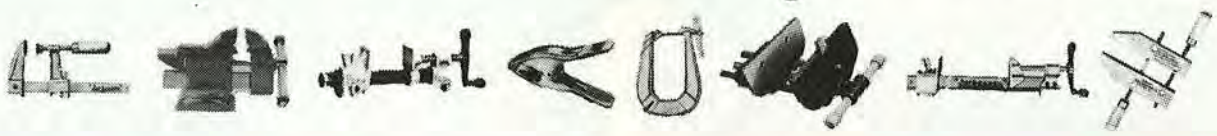
WELCOME TO OUR SHOWROOM
Call for free catalog.
Prices are subject to change without notice.
* F.O.B. CITY OF INDUSTRY, CA or CLARKSBURG, WV

We've helped hold it together... Since 1903

"Jorgensen"®
"Pony"®
"Adjustable"™

Quality in our products... dedication in our service. We've held to these commitments just as you've held up our Clamps and Vises as your standards to each new generation since 1903. We'll continue to hold consistently to our traditions of excellence.

Write for our Catalog SEND $1.00
Adjustable Clamp Company
410 N. Ashland Avenue, Chicago, IL 60622



TALKING BACK

Continued from page 11

Cutting coves on a radial-arm saw

I want to thank you for the clear, concise plans for the walnut bookcase in issue 50. It turned out beautifully, but I was faced with a problem in cutting the cove molding for the top. Since my tablesaw blade rises on an eccentric and moves forward as it rises, this prevented me from setting a fence that would stay in a given relationship with the saw. So, I turned to my radial-arm saw.

I placed the saw in the "cut-off" position, and then, moving the saw's radial arm 33° to the left, I used the existing rip fence and simply lowered the saw in small increments. I relied on the same procedure in making bookends for the bookcase.

—Raymond Babcock, San Angelo, Texas.

Not quite picture perfect

I guess by now the world has inundated you with blasts on the reversed photographs in the "Home workshops that work" article in April 1993 issue [no. 60]. *WOOD®* magazine always provides a special education and is an open window for an eager woodworker to dream, plan, and create—mistakes or no mistakes.

—Don Yahl, Bellflower, Calif.

"Da' Scrollers" welcome here

Many thanks for the introduction to "Da' Scrollers" (issue 59, *page 25*). They are really a class operation. The patterns are sharp-lined and come with comprehensive instructions and scrollsaw information. However, to avoid frustration, the novice scrollsawer should read your article carefully to understand the equipment he needs to achieve "artistic" results. Keep up the good work.

—Harold Cator, Rochester, N.Y.

Reader solves snipe problem

In your February issue, I was suprised that you missed a real simple way to take care of snipe when planing lumber. If a series of boards being planed are butted against each other as they are fed through the planer, sniping will occur only on the leading edge of the first board and the trailing edge of the last board. That's where scrap lumber comes in handy. Butt scrap pieces at each end and the snipe will occur on these pieces, not on your expensive lumber. But do not use plywood as the grain does not all lie in one direction.

—"Red" Babcock, San Angelo, Texas.

Print this article

EARN CASH, PRIZES FOR YOUR TOP SHOP TIP

Do you have a great shop tip (or two) you'd like to share with other *WOOD*® magazine readers? For each published submission, you will get at least $40 from *WOOD* magazine (as much as $200 if we devote a page or more of space elsewhere in the magazine to your idea). You also may earn a woodworking tool for submitting the Top Shop Tip for the issue.

We try not to use shop tips that have appeared in other magazines, so please send yours to only one. *We do not return shop tips.* Mail your tip(s), address, and daytime phone number to:

Top Shop Tip
WOOD Magazine
1912 Grand Ave.
Des Moines, IA 50309-3379

TOP SHOP TIP

For his tip, Ron receives a Sears/Craftsman 10" benchtop bandsaw, model 24450, *above*.

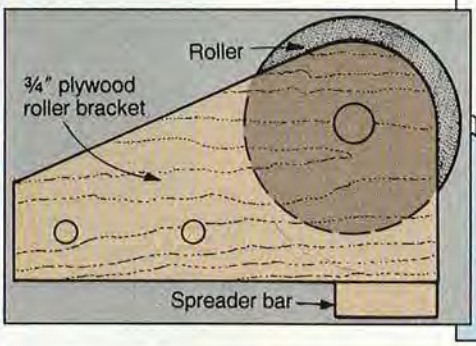
Tablesaw outfeed roller glides on drawer slides

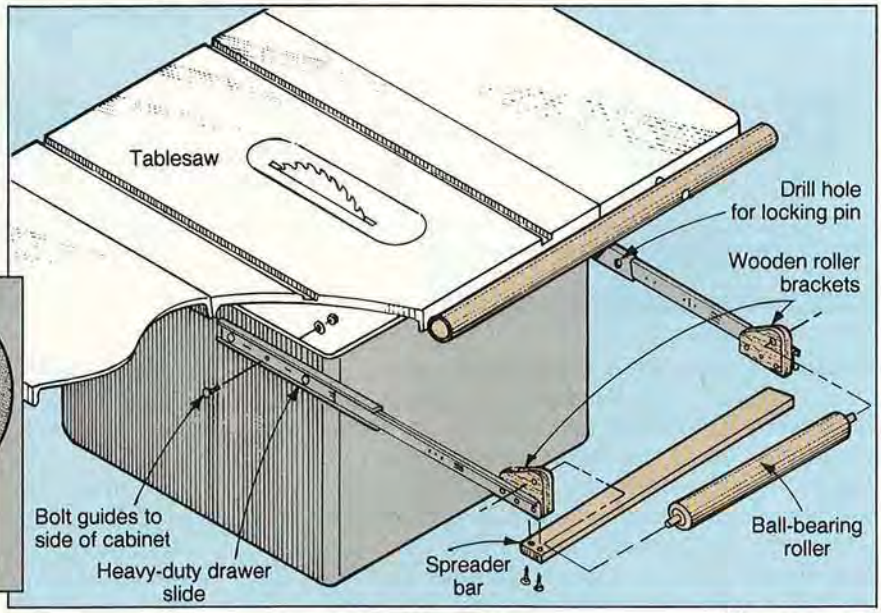
You can't always find a helper when you want to rip long stock on your tablesaw. A floor-standing roller? That works great unless you have material stacked behind the saw or something else blocking the floor back there. There must be another answer.

TIP: Equip your tablesaw with a slide-away outfeed roller mounted on heavy-duty drawer slides. Choose side-mount slides that will extend far enough to place the ends about 36" behind the saw blade. Then, mount one slide on each side of the saw base, locating them so they don't interfere with the rip fence or the saw's controls or adjustments.

Now, screw a plywood bracket to the end of each slide, with the upper edges at table level or slightly below. Locate them to clear the rip fence when retracted. Add spacers as necessary to fit a standard outfeed roller (available from woodworking-supply dealers). Attach a spreader bar across the end for stability.

-Ron Salmon, Kamloops, B.C.





Hardboard cleans up portable saw's cuts

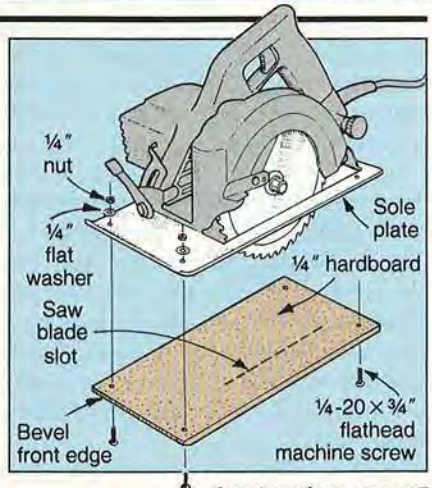
Rather than wrestle a big sheet of plywood across your tablesaw, you decide to cut it with a portable circular saw. The only problem: a splintered edge.

TIP: For splinter-free sawing, equip your portable saw with a zero-clearance base. Cut a piece of ¼" tempered hardboard to fit your saw's sole plate. Raise the blade, and fasten the hardboard to the sole plate with countersunk flathead machine screws and nuts.

Next, clamp the saw to a sawhorse, keeping the area below the blade clear. Plug the saw in, turn it on, and slowly lower the blade through the hardboard to make the zero-clearance blade slot.

When using a portable saw, cut with the good face of your material down. With this base installed, remember: *the lower blade guard will be inoperative. Don't set the saw down until the blade has stopped turning.*

-Jon Grasson, Olney, Md.

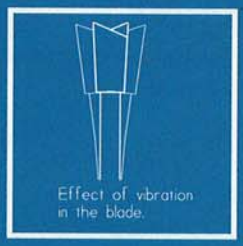


Continued on page 17

Wanna' hear the latest in saw blades? You can't!

You can't, because these new blades are absolutely quiet and vibration-free. All other blades vibrate. If you don't believe us, take the blade you're currently using, hold it by the arbor and tap it with a pen or pencil. Hear the ringing noise? That's the vibration, the same thing that happens when you make a cut. Now, tap the blade on this page. No really — try it! That's what our new blade sounds like.

Vibration does more than just make noise. It causes teeth to dull faster and makes the cut less precise. So how do we eliminate vibration? We laser cut patented anti-vibration reeds right into the blade body. The sound gets trapped in the reeds and there you have it, no vibration.


Effect of vibration in the blade.

Not only is this the quietest blade, but the most precise. Why? Vibration causes micro-chipping on the edge of the workpiece and the kerf width to vary. We've also incorporated Freud's innovative new Square Tooth™ design — by taking the same amount of carbide as in our other blades and reshaping the tooth to make it thicker and shorter. A shorter tooth is less likely to follow the grain of the wood, thus permitting a more precise cut. A thicker tooth will also yield more sharpenings, extending the life of the blade. Also, our Titanium super micro-grain carbide lasts longer between sharpenings than other manufacturers' carbide.

A higher tooth angle prevents splintering and chipping. So we increased the bevel angle for each blade to give you a splinter-free cut. We have 3 blades to handle any woodworking project: 40 tooth ATB general purpose, 60 tooth triple chip for man-made materials, and 80 tooth ATB crosscutting.

So, there you have it. A new blade so advanced, that it will change woodworking forever! Go see your local dealer and ask them to let you tap our blade. It really is that good.

freud®

Precisely what you need.

1993 Popular Woodworking Readers' Choice Awards

PUT YOUR SHOP...IN OUR POCKETS

SHOP POCKETS™

$69.95

The Shop Pocket™ work vest is the creative and practical answer of having everything where you need it, when you need it.

Shop Pockets™ unique features:

- Zippered removable pockets prevent spillage
- Padded shoulders to evenly distribute weight.
- Mesh fabric – durable, lightweight and best of all, cool.
- Variety of vests and accessories available in multiple sizes and colors.
- Accessories priced separately.

By Fantech™

1712 Northgate Blvd.
Sacrasota,FL 34234
Customer Service: 813-351-2947
1-800-747-1762 Order Hot Line

Space Age Reinforced Polymer
WORKHOLDING
HAND CLAMPS

Light Weight
Soft or Hard Tips
Chemical Resistant
Non-Conductive
Made in USA

NEW!
FROM
BTM®
BTM Corporation
300 Davis Rd
Marysville, MI
48040 USA

MODEL	OPENING	HOLDING	PRICE
CC-1	1"	10 lbs.	$ 4.75
CC-2	2"	100 lbs.	7.50
CC-3	3"	200 lbs.	9.75
CC-4	4"	300 lbs.	16.50

VISA & Mastercard Accepted
ORDER TOLL FREE **1-800-878-1900**

ROBLAND X 31
THE INTELLIGENT ONE MAN SHOP

90-MINUTE DEMO VIDEO

- 1100 lbs.
- 3 separate 3HP motors
- 12" jointer
- 12" planer
- 10" table saw
- 50" sliding table
- 3HP shaper
- mortiser
- cast iron

The Robland X 31
is designed to make maximum use of minimum space ideal for the small professional shop and the demanding hobbyist. Change from one tool to another in 20 seconds or less! Solid, sturdy, reliable.

CALL OR WRITE FOR MORE INFORMATION NOW!

2265 LAGUNA CANYON RD., LAGUNA BEACH, CA 92651
LAGUNA TOOLS
1-800-234-1976 or 714-494-7006

Econ-Abrasives
WE MAKE ABRASIVE BELTS ANY SIZE, ANY GRIT!

Standard Abrasive Sheets

CABINET PAPER

	50/pk	100/pk
60D	$15.00	$27.00C
80D	14.00	25.00C
100 thru 150C	13.00	23.00C

FINISHING PAPER

80A	$ 10.00	$17.00C
100 thru 280A	9.00	15.00C

NO LOAD PAPER(white)

100 thru 400A	$11.00	$19.00C

"C" = 100 SHEETS

Velcro® Vacuum Discs
8 Hole pattern for Bosch sanders

Dia.	Grit	Price
5"	60	$ .48ea
5"	80	.46
5"	100 thru 320	.45

** OTHER PRODUCTS **

*Wide Belts*Rolls*Flap Wheels
*Pump Sleeves*PSA Discs
*Router & Wood Bits*Wood Glue

ABRASIVE BELTS

PLEASE SPECIFY GRITS

1X30	$ .73 ea	3X24	$ .84 ea
1X42	.73 ea	3X27	.87 ea
1X44	.73 ea	4X21 3/4	.96 ea
2 1/2X16	.77 ea	4X24	.99 ea
3X18	.78 ea	4X36	1.20 ea
3X21	.81 ea	6X48	3.14 ea
3X23 3/4	.84 ea	2 1/4X80	2.94 ea

OTHER SIZES ON REQUEST

HEAVY DUTY SPRING CLAMPS
Clamps come w/PVC tips and grips.

Size	Price
4"	$1.75 ea
6"	2.25
8"	3.50

JUMBO ROUTER PAD(24" x 36")
It will not allow small blocks of wood to slip out under router or sanding applications. ROUTER PAD ONLY $8.95ea.

JUMBO BELT CLEANING STICK ONLY $8.80

*MasterCard, VISA, C.O.D. or Check
*SATISFACTION GUARANTEED!!!
*CALL FOR *FREE* CATALOG
- TX & NV add appropriate sales tax
- Continental U. S. shipping add $5.50

Econ-Abrasives
P. O. Box B865021
Plano, TX 75086
(214)377-9779

TOLL-FREE ORDERING LINE (800) 367-4101

TIPS FROM YOUR SHOP (AND OURS)

Continued from page 14

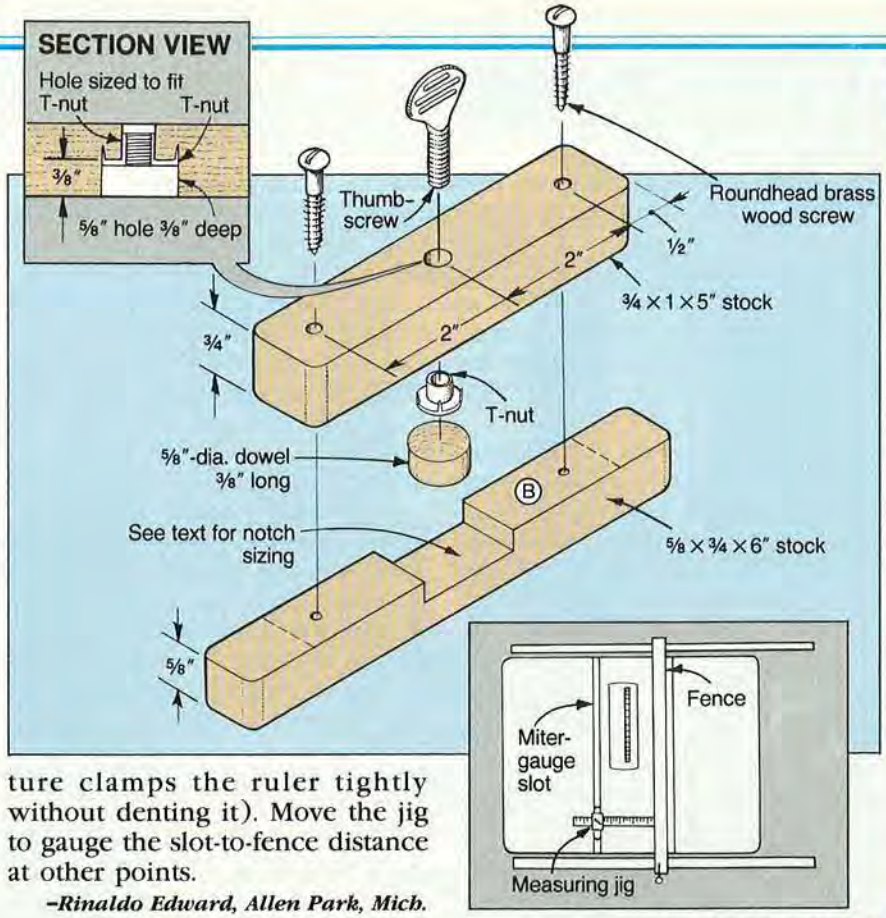
Set your fence accurately with this shop-made gauge

You can't rip accurately on your tablesaw unless you can set the fence parallel to the blade. And some fences just seem to defy proper adjustment.

TIP: Set your fence more precisely with this easy-to-build jig. Construct the fixture shown, sizing part B to fit the miter-gauge slots on your tablesaw. Cut the notch through part B so that the bottom lies flush with the saw table when part B sits in the miter-gauge slot. Match the width of the notch to a wooden yardstick or ruler.

Slide the ruler or yardstick into the completed fixture. With part B in the the miter-gauge slot and the fence in position, slide the ruler over until the end touches the rip fence. Tighten the thumbscrew (the dowel inside the fixture clamps the ruler tightly without denting it). Move the jig to gauge the slot-to-fence distance at other points.

–Rinaldo Edward, Allen Park, Mich.



Continued on page 18

STAINED GLASS VIDEO & CATALOG

Improve the Looks and value of your home with:

- Entry doors & sidelights
- Kitchen cabinet inserts
- Tiffany lampshades

Save money and make it yourself - Delphi shows you how!

Make Your Own Custom Stained Glass...
The perfect way to get started in stained glass. Our 25-minute video covers all the basics: Scoring, breaking, foiling, and soldering. Filled with clear and simple instructions, hints, close-ups, and examples to help you craft your own stained glass windows, lamps, and more. VHS only.
#6149VW...$10.95 + $3.00 shipping/hand.

A $10.95 rebate is applied to your next order. If you don't wish to purchase, just return the video for a prompt refund, but keep the 80-page color catalog.

To Order - Call Toll Free: 1-800-248-2048

DELPHI STAINED GLASS
2116 E. Michigan Ave.
Lansing, MI 48912

Do-It-Yourself Kits

Factory Direct Clocks and Furniture

Also Assembled and Finished

- Grandfather Clocks, Mantel and Wall Clocks
- Curios, Tables, Chairs, Desks, Cradle...and more!
- Solid 3/4" Black Walnut, Cherry, or Oak
- Heirloom Quality
- Solid Brass West German Movements and Dials
- Money Back Guarantee

I am interested in
☐ Do-It-Yourself Kits
☐ Finished Clocks
☐ Finished Furniture

SEND $1 FOR COLOR CATALOG

Name _____
Street _____
City _____
State _____ Zip _____
(Please Print)

EMPEROR CLOCK COMPANY
World's Largest Manufacturer of Grandfather Clock Kits
Dept. 4813 Emperor Industrial Park
Fairhope, Alabama 36532 • Phone 1-205-928-2316

The Ultimate Woodworking Tool!

NEW! 1993-94 Catalog from The Woodworkers' Store
Over 200 new, hard-to-find items!

YES! Send me the next four issues of The Woodworkers' Store catalog for only $2 a year

Name _____
Address _____
City _____ State _____ Zip _____

The Woodworkers' Store®
Dept. 33112
21801 Industrial Blvd.
Rogers, MN 55374

TIPS FROM YOUR SHOP (AND OURS)

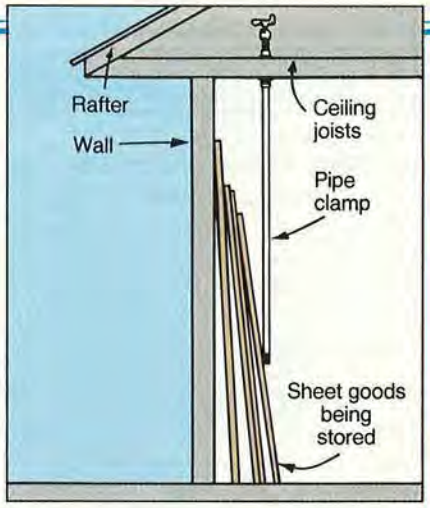
Continued from page 17

Bar clamps contribute to upstanding storage plan

Cutting sheets of plywood into large project parts can severely strain shop space. By the time you stack the uncut sheets and find a place to stack the cut pieces, you may not have much room left to do the sawing.

TIP: In a workshop with open ceiling joists, such as a garage, there's a quick answer to your storage problem. Just attach a long pipe clamp to a joist, with the pipe hanging down. Set the distance between the wall and the clamp to accommodate the material you're storing. Now you can stand the pieces on end, straight and close to the wall. When you've completed the project, take down the clamp.

–Augie Inciong, Laguna Niguel, Calif.



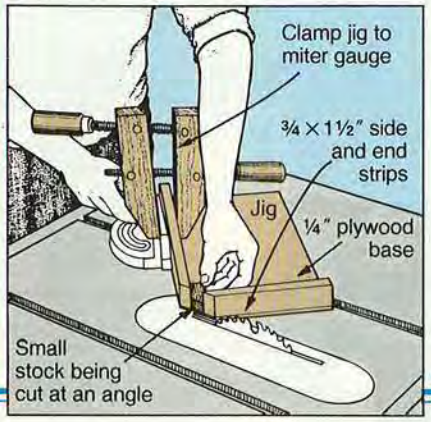
Tablesaw jig chamfers small stock safely

You want to chamfer the corners of some small pieces of stock using the tablesaw. Your fingers end up uncomfortably close to the blade, though.

TIP: Construct the jig shown from ¼" plywood and scrapwood. Size the base according to the stock you'll be cutting and the distance between the saw's miter gauge and blade. Square one end to one side, and then attach cleats to the square corner with glue and brads. Be careful not to put metal fasteners into the cutting line. Clamp the jig to the miter gauge. Cut the corner off the jig, adjusting the position to achieve the desired angle on test stock. Then, cut your project parts safely.

–Alan R. Holtz, Torrance, Calif.

Continued on page 20



Turn Your Hobby Into A Business

As a FURNITURE MEDIC®, you can use your woodworking talent as a stepping stone to a full-time business of your own.

Advanced technology allows FURNITURE MEDIC® to perform various types of on-site furniture repair, including scratches, dents, water marks, finish imperfections, broken joints, etc.

The market for our services is unlimited and includes manufacturers, shippers, moving companies, retailers, hotels and a multitude of other commercial settings where furniture takes heavy wear and tear.

We Offer
- Comprehensive training - no experience required.
- Continuous support.
- Research and development support.
- Advertising materials and national support.
- Flexible work schedules.
- Low overhead/low capital concept.

For more information on this franchise opportunity, call FURNITURE MEDIC®. We accept calls 24 hours a day.

Your investment starts at $10,500

1 (800) 877-9933

... or call us collect at (404) 361-9933

FURNITURE MEDIC®

"the prescription for damaged furniture."®

A few feet or so from a 1940 Delta Bench Drill Press stands another "sure-to-be" Delta heirloom. The new Delta Sanding Center™ Belt/Disc Sander.

George Reid, master craftsman and furniture historian, admits he's never seen anything quite like it. A machine capable of precision edge-sanding a 24" diameter circle. (48" with accessory extension.) With a 6" x 48" belt and 12" disc, accompanied by a power take-off shaft that handles dozens of accessories. Like pneumatic drums, flap wheels, buffing wheels and a flexible shaft, just to name a few. And a hefty cast iron base that incorporates single port dust collection.

In his 51 years of working with wood, Mr. Reid has created scores of perfect historical reproductions and original heirlooms, both full size and miniature, using his old Delta machines. And at age 78, George isn't about to back away from a new idea like the Delta Sanding Center. He points out, "This time Delta's put everything into one machine."

For more information on the Sanding Center or the name of your nearest Delta dealer, call toll free: Delta International Machinery Corp., Pittsburgh, PA, 800-438-2486. In Canada, 519-836-2840.

Building On Tradition

DELTA

A Pentair Company

Model 31-280 shown with accessory pneumatic drum, dust collector tray, hoses and mobile base.

We're pleased to be underwriters of The New Yankee Workshop and The American Woodshop on public television.

It's A Train It's A Whistle!

It's all wood and fun to build with our easy to follow plans.

This unique, all wood train engine with its integral double whistle system creates a dual pitch sound like a real train whistle. *Irresistible!*

For plans send check or money order for $8.89

To: LACK WOOD PRODUCTS
509 CYPRESS GARDENS BLVD.
WINTER HAVEN, FL 33880

See the "Worth Writing For" section for our catalog!

Garrett Wade
161 Avenue of the Americas
New York, NY 10013
(800) 221-2942

Woodworking Tool Catalog: 232 pages of tools from the USA and around the world: measuring tools, planes, saws, chisels, carving tools, power tool supplies, workbenches, finishing supplies and books – plus hundreds of tips on selecting, using, and maintaining the tools that will serve you best. $4.00

24 Page Sampler Catalog Free

Classic Hardware Catalog: 48 pages of the finest brass furniture hardware: handles, knobs, hinges, latches, locks, and casters. $3.00

Sand-Rite

Pneumatic Drum/Brush Head Sander Eliminate Tedious Hand Sanding!

Model No. DB-612

Sand irregular surfaces *without loss of shape or detail.*

Made in USA.

Pneumatic sanding drum. Available in five diameters, 2" to 8". Operator-regulated inflated drum conforms abrasive sleeve to contoured work.

Our nationwide dealer network serves you.
To order, call **Toll-Free 1-800-521-2318**
or your nearest dealer or a Free brochure.

Sand-Rite MANUFACTURING CO.
321 N. JUSTINE ST. ■ CHICAGO, IL 60607

One-Man Sawmill Turns Timber Into Cash!

30-DAY FREE TRIAL!

Sawmill goes right to the trees...turns out smooth, true-cut lumber - even beginners get excellent results. Just one man (no crew needed) can easily cut enough on weekends to save hundreds of dollars over high lumberyard prices. Factory-Direct selling keeps price low...easy terms...made in USA.

PHONE TOLL FREE 1-800-942-4406 Ext. TW11
TIMBERKING, INC. DEPT TW11
1431 N. TOPPING, KANSAS CITY, MO 64120

High Tech Engraving

See what everyone has been talking about!

Engrave on: Wood, Glass, Metal, Stone, Ceramics, Eggshell

- Precise Detail
- No Vibration
- 400,000 RPM
- No heat buildup
- You don't have to be an artist when you use our exclusive stenciling system.

1-800-755-0261 or 414-251-0981
SCM Enterprise • W16N11318 Western Avenue, Germantown, WI 53022

Buckboard Bench
(real springs)

Kit includes: authentically designed steel springs that give a little, metal arms & backrails, complete hardware & detailed instructions. **$49.00** (Visa, MC Accepted)

Price includes shipping UPS. IN res. incl. 5% sales tax. We manufacture the bench from solid oak/with cushion and personalized with your name or business. **$244.00.**

The Roudebush Co.
Box 348A, Star City, Indiana 46985
800-847-4947

THE GIZZMO FACTORY

OAK & MARBLE COFFEE TABLE PLANS

- Combine the beauty of wood and stone!
- It's easy!
- Complete plans, instructions and helpful tips
- Table measures: 50 1/2" L X 22 1/2" W X 16" H
- Send check or money order for $10.00 (8.50 + 1.50 S&H) Washington residents add 8.2% sales tax
- When ordering please specify: Plan #09
- Ask for information on all the custom Gizzmo Factory plans!

PO Box 70162 Seattle, WA 98107 1-800-560-3347

Van Dyke's

Presents a Catalog

with supplies for upholstery, antique restoration, wood working, caning, brass hardware, carvings and many related trades!

VAN DYKE SUPPLY COMPANY · SUPPLIES FOR CREATIVE ARTS AND TRADES ·

40 Years in Creative Arts & Trades

Many Hard-To-Find Items!

SEND $1.00 FOR CATALOG TO:
VAN DYKE'S RESTORERS
Dept. D55, P.O. Box 278, Woonsocket, SD 57385

TIPS FROM YOUR SHOP (AND OURS)

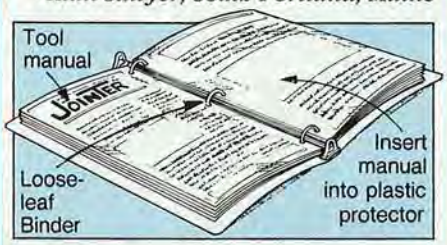
Continued from page 18

Important shop papers need organization, too

You'd like to refresh your memory on a couple of points before changing your jointer's knives. But the instruction book doesn't seem to be in the drawer where you remember seeing it last.

TIP: Keep instructions and other important information for your tools and equipment in a binder for ready reference. Place the papers for each tool or piece of equipment into plastic document protectors (available from your local office-supply dealer) and insert them into a loose-leaf binder. Separate the sections for your various tools with tabbed divider pages. Then, label the binder and keep it on a shelf in your shop.

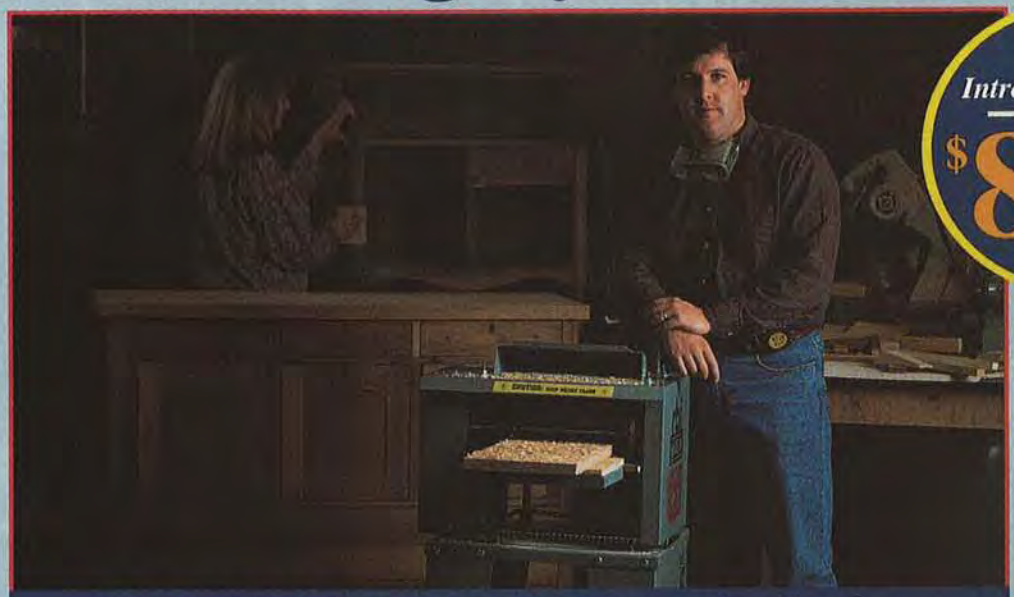
–Alan Sawyer, South Portland, Maine



MORE TIPS FROM OUR WOODWORKING PROS

- For a dust cover that allows easy access to the back of a free-standing cabinet, check out the one we used on the mission-style clock. It's part K, shown on *page 34*.
- Take a look at our V-block jig on *page 36* for an alternative method of machining tenons to fit round mortises.
- Try our bird feeder design on *pages 46–49*, or design and build your own using the tips from Pat Schlarbaum, songbird specialist with Iowa's Department of Natural Resources.
- Even if coat racks don't top your building priority list, see the three full-sized wildlife patterns on *pages 56* and *57*. They make great decorations for other projects.

Introducing The Most Versatile and Affordable Planer Woodworking System There Is.



Special Introductory Price
$849
(planer only)

The RBI 812 is a Planer, Molder, and a Sander.

The NEW RBI Model 812 Planer Woodworking System.

The Most Versatile and Affordable Combination Planer Woodworking System There Is.

It's true. No other planer in the marketplace gives you this much versatility at such a low price. Now do the jobs you've always dreamed of doing.

The Model 812 is a heavy-duty, three-in-one precision woodworking system complete in just one compact tool system.

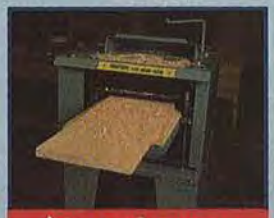
The 812's **Planer, Molder, and Sander** capabilities will produce the top quality, professional results you desire.

The Model 812 is truly the best value for your money. With its continuous duty rated 3 HP TEFC (totally enclosed fan cooled) motor, the Model 812 will plane, mold, or sand at 11 feet per minute all day long.

If woodworking is your business *or* your hobby, you'll never have a more versatile tool.

Imagine What the Model 812 Can Do For You!

- *Create custom cabinets and fine furniture*
- *Customize existing woodwork or the home addition you've been planning*
- *Finish and dimension standard stock to exactly fit your needs*
- *Turn rough lumber into beautiful expensive molding in just minutes*
- *Produce uniform surfaces even on long stock*
- *Plane lumber from up to 12" wide in just seconds*
- *Create hundreds of ornamental moldings from hard or soft woods with standard or customized knives*
- *Create beautiful and ornamental picture frames for yourself or for resale*
- *Eliminate distortions caused by tedious hand-sanding*



As a planer -
finish your own lumber to meet exact specs, without paying custom milling fees.

As a sander -
replace hours of tedious hand sanding with just one pass.

As a molder -
create picture frames, crown moldings, window trim, and much more.

rbi MADE IN USA TESTED AND TRUSTED SINCE 1929

Call 800-487-2623 To Place Order or Get FREE Info Kit.

Our Guarantee To You.
30-Day Money Back Guarantee
3-Year Warranty (1 Year on Motor)

rbindustries
The American Tool Manufacturer
1801 Vine St. • P.O. Box 369
Harrisonville, MO 64701

C39

We've Added Speed To Every Woodworking Vise...

FOR A LIMITED TIME ONLY RECORD IS GIVING AWAY A SPEED CLAMP WITH EVERY WOODWORKING VISE.

We're making this great offer to introduce you to remarkable Record Woodworking Vises... the quality vises that defy comparison!

Remember, before you buy - always compare and you'll insist on Record! You should ensure that the sliding jaw and body are finely cast from grey iron. And, these components should be precision machined on computer controlled equipment for consistent repetitive accuracy so you don't have to worry about 'getting a good one'. Look at the vise side-on. When fully closed the jaws should meet only at the top, leaving a gap at the bottom. That gives you even clamping pressure on the whole depth of the workpiece. And, of course, countersunk holes should be provided so you can fit your own choice of wooden cheeks to protect the work.

The steel main screw should have a buttress thread and quick-release trigger mechanism. This disengages the main screw allowing the jaw to slide freely - saves a lot of time if you're working with different widths of stock. The steel guide rods will be accurately made and fitted, reducing wear and providing a smooth parallel adjustment. And if you intend to install 'stops' along your bench top, you'll find an adjustable 'dog' is a useful extra.

These and other features have made our vises first choice for generations of woodworkers.

BONUS

Purchase any one of these quick release woodworking vises (52ED*, 52 1/2ED*, 53E with 8", 13", and 15" jaw openings) at your authorized dealer before March 31, 1994 and you'll receive a Record Speedclamp M.S.L over $25.00... ***ABSOLUTELY FREE!***

LIMITED OFFER! While supplies last

* With adjustable 'dog'.

Record Tools

Visit your authorized Record Dealer today!

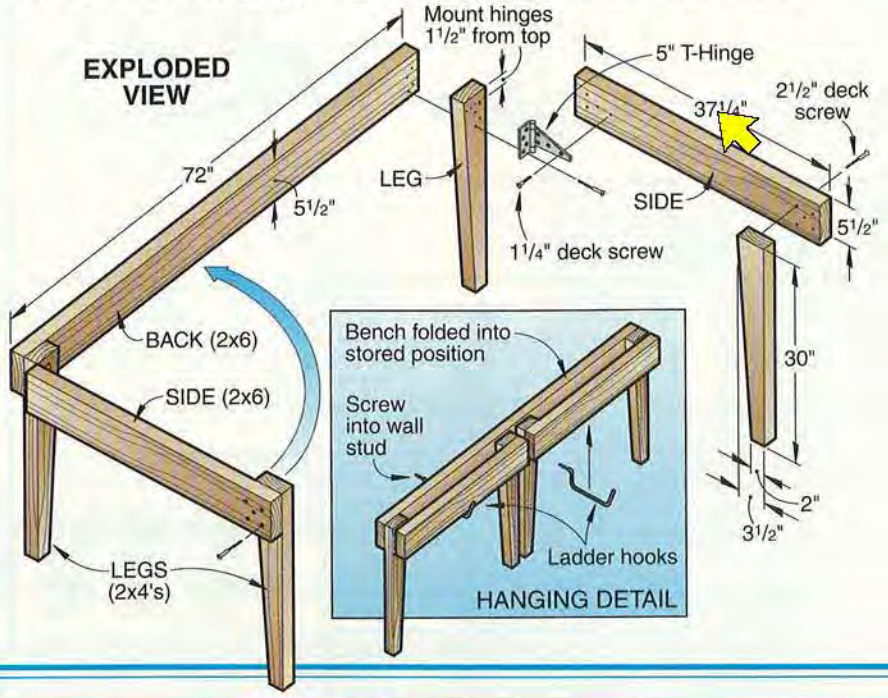
Record Tools Inc.
2506 W. Barberry Place, Denver, Colorado, USA 80204
Phone: (303) 892-9332 Fax: (303) 893-5012

1915 Clements Road, #1, Pickering, Ontario, Canada L1W 3V1
Phone: (416) 428-1077 Fax: (416) 428-7555

GREAT IDEAS FOR YOUR SHOP

Print this article

FOLD-OUT WORK SUPPORTS



Short on work space? Try this compact project. Spread the legs for a stable support when cutting bulky pieces of sheet goods. Or, position a piece of plywood on its top, and use it as a temporary worktable. Then, when you're done, just fold it up and hang the support on two ladder hooks.

Project Design: Marvin Hoppenworth, Cedar Rapids, Iowa
Illustration: Jamie Downing
Photograph: John Hetherington

WOODWORKER II - Best on TABLE SAW

With this ONE ALL PURPOSE blade (40 Teeth) you can SMOOTH RIP & CROSSCUT 1"-2" ROCKHARDS and SOFTWOODS with **smooth-as-sanded surface**. PLY-VENEERS (oak/birch) crosscut with NO BOTTOM SPLINTER.

- Mostly 1/8 kerf 15°, ATB and 20° face hook (easyfeed).
- DOUBLE HARDER and 40% STRONGER CARBIDE.

- Ends **blade changing** (does rip, combo and crosscut).
- Ends **scratchy saw cuts** (for the rest of your life).
- Ends **second step finishing** (jointing or sanding).
- Ends **cutting 1/16" oversize** to allow for RESURFACING.
- Buy and **sharpen ONE** blade instead of 3 (24T rip, 50T Combination, 80T Crosscut).
- *Strongly* recommend our *.001* flat **large stiffener-dampener** against out side of blade for smoothest, quietest cuts by this and any other blade.
- Use 30T if ripping mostly 2" - 3" hardwoods.
- Side wobble held *.001* - others .004/.010 is common! RAISE for THICK woods, LOWER for THIN woods and *perfect cut everything!* All 5/8" holes, unless otherwise noted.

	List	SALE		List	SALE
14" x 40T x 1" BORE	$215	$149	9" x 40T	$146	**$109**
14" x 30T x 1" "	195	139	30T	125	**99**
12" x 40T x 1" "	183	129	*8-1/4" x 40T 3/32	136	**99**
12" x 30T x 1" "	162	119	8" x 40T 3/32	136	**99**
10" x 40T 1/8 & 3/32	156	119	30T 3/32	115	**89**
30T 1/8 & 3/32	135	99	7-1/4" x 30T 3/32	112	**69**
5/8" holes std. Boring up to 1-1/4" $7.50 extra - Shipping $4.50			New 6" x 40T 3/32	139	**89**
			*** NEW For Sears Table Saw**		

Also help all your other blades to cut better.
Use our 1/8" DAMPENER STIFFENERS, against one side

4" - $21
5" - $24
6" - $25

Tryable and RETURNABLE.
Stops vibration, flutter, cutting noise and blade ring.
Parallel and flat to .001 • 7" and larger available.

5/8" holes std. Boring up to 1-1/4" $7.50 extra.
Others available. Add $2.50 Shipping.

WOODWORKER I - For TABLE and RADIAL SAW

this trim and crosscut ALL PURPOSE blade gives scratch free POLISHED cuts on all materials RIP or CROSSCUT up to 2".

- All 60T and 3/32" *THIN* kerf 30° ATB and 5° face hook on 10" dia and under. 12" and 14" are 20° ATB 1/8" K.
- DOUBLE HARDER and 40% STRONGER carbide.
- THIN KERF:
  Saves 1/3 wood loss on each cut, radial or table. Feeds easy when used for moderate rip and crosscut on table saw. **Reduces "JUMP IN"** greatly for better "PULL CONTROL". Practically **eliminates bottom splinter** on RADIAL-CROSS CUT.
- Totally stops ALL bottom and top splinter on ply veneers in push-cut mode on RADIAL.
- Our STIFFENER STRONGLY RECOMMENDED AGAINST outside of blade only for best cuts.

Made and serviced in USA for your benefit.

	List	SALE
14" x 60T x 1" 1/8"	$224	**$159**
12" x 60T x 1" or 5/8" 1/8" K	198	**139**
10" x 60T x 5/8" 3/32" K	162	**129**
9" x 60T x 5/8" 3/32" K	156	**119**
8" x 60T x 5/8" 3/32" K	150	**109**
New 8-1/4" x 40T x 5/8" 3/32" K	136	**99**

RYOBI RA200 TS200 SEARS HITACHI PSM8
MAKITA 500B NBA PORTER CABLE 368-1

DADO KING MULTITOOTH *LASERCUT DADO SET* cuts *ALL* 1/4 - 13/16 flat bottom grooves WITH or CROSSGRAIN all woods. OAK, BIRCH, VENEER PLYS, and MELAMINE. NO SPINTERING due to unique 4T Neg. Face fillers and 24T outside saws. ***OUT PERFORMS 29 OTHER DADO SETS*** *-Wood Magazine*, Oct. 91

Boring up to 1-1/4" $25 per set
SALE! 10% OFF $5.50 Per Set Shipping

"No tearout on all five woods tested." *-Fine Woodworking July/Aug, 1991*

8 - 5/8" Bore List $321/**SALE $289** • 10 - 5/8" & 1" Bore List $389/**SALE $349**

For HOLZ-HER VERTICAL PANEL SAW 220mm x 30mm Bore

50 Teeth CONCAVE FACE		80 Teeth FLAT FACE	
#1	#2	#3	#4
List $162	SALE $139	List $204	SALE $159

(for use with or without 2 knife scorer)

For STREIBIG VERTICAL PANEL SAW 300mm x 30mm Bore

60 Teeth CONCAVE FACE		100 Teeth FLAT FACE	
#1	#2	#3	#4
List $238	SALE $179	List $263	SALE $179

DURALINE Hi-AT For TABLE & RADIAL SAW

(very good on chop saw tool) STOP SPLINTERING those SPLINTERY OAKS, HARDWOOD VENEERS and *thin* 2 SIDE LAMINATES ON PARTICLE BOARD.
FOR FASTER FEED RATES AND MORE ABSOLUTE SPLINTER CONTROL.

NEW PRICES EFFECTIVE SEPT. 1, 1993.

DURALINE Hi-AT

Note: *Fine Woodworking Editorial Nov./Dec. 1988 No. 73, pg. 65, S.N. recommends high alternating top bevel (ATB) thin kerfs and large blade stiffeners for smoothest cuts on RADIAL SAW, etc.*

Jim Forrest, President and designer microscoping cutting edge.

All 5/8" holes. Boring up to 1-1/4" $7.50 extra
Larger holes - time basis. Shipping $4.50

7-1/4" x 60T	3/32" K	$129	12" x 80T x 1" 1/8		$181
8" x 80T	1/8" & 3/32" K	169	12" x 100T x 1" 1/8		215
9" x 80T	1/8" & 3/32" K	179	14" x 80T x 1"		197
10" x 80T	1/8" & 3/32" K	262	14" x 100T x 1"		226
SPECIAL SALE 10" ONLY $159			16" x 80T x 1"		223
			16" x 100T x 1"		243

CARBIDE is THE HARDEST OF THE C-4 grades and 40% STRONGER, NOT WEAKER!! For 50% to 300% longer life!

CHOPMASTER SERIES FOR *MITER SAWS*

for tight, smooth, splinter-free miter joints.
NEW AVAILABLE SIZES

		List	SALE
Hitachi 8-1/2" DeWalt 8-1/2"	8-1/2" x 60T x 5/8"	$179	$109
Delta	9" x 80T x 5/8"	204	119
Ryobi-Makita	10" x 80T x 5/8"	207	129
Hitachi	12" x 80T x 1"	229	139
Ryobi-Makita	14" x 100T x 1"	266	179
Hitachi	15" x 100T x 1"	277	189

Use small stiffener where possible

WE RECOMMEND OUR FACTORY SHARPENING as some local sharpening creates problems with **Micro-chipped edges** reducing blade life & cutting quality.
2-4 DAYS ON THESE AND ALL MAKES OF FLAT FACE & CONCAVE CARBIDE TIP SAWS.
SHIP VIA UPS. Typical 10" x 40T $15.00, 60T $17.75. Add return UPS $4.50 or 2nd Day Air $8.

SATISFACTION GUARANTEED OR FULL CASH REFUND.
47 years of fine American saw making & sharpening.

FORREST
FORREST MANUFACTURING COMPANY, INC.
461 RIVER ROAD, CLIFTON, NJ 07014
DEALER INQUIRIES WELCOME

BUSINESS OPEN ACCOUNTS AVAILABLE

FOR SPECIAL BONUS MENTION WOOD® MAGAZINE
We honor Amex, VISA, MasterCard & Discover, Money Orders, Personal Checks, and CODs. Specify Dept. WD when ordering.
PHONE TOLL FREE! 1 (800) 733-7111
(IN NJ; 201-473-5236) FAX: 201-471-3333

MLCS LTD.

MAKE BEAUTIFUL RAISED PANEL DOORS WITH YOUR . . . 1/4" or 1/2" ROUTER . . . 1/2" or 3/4" SHAPER

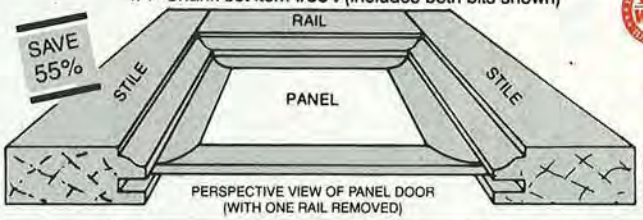
Professional production quality bit makes it quick and easy to produce matching rails and stiles — the panel raising bit with ball bearing guide makes the raised panel perfect every time.

SALE PRICE FOR COMPLETE SET $69.95 Regular value over $150.00!

1/4" Shank set item **#554** (includes both bits shown)

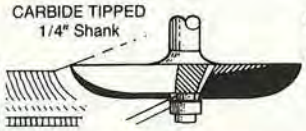
SET ALSO AVAILABLE IN 1/2" SHANK - $79.95 - Item #852

Shaper Cutters set: Item #1059 SAVE! only **$99.95** Set: Rail & Stile & Raised Panel Cutters



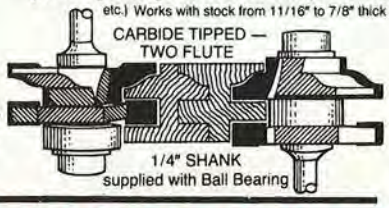
PERSPECTIVE VIEW OF PANEL DOOR (WITH ONE RAIL REMOVED)

RAISED PANEL BIT SUPPLIED WITH BALL BEARING



REVERSIBLE COMBINATION RAIL and STILE BIT

(For making matching rails and stiles in raised panel doors, etc.) Works with stock from 11/16" to 7/8" thick



CARBIDE TIPPED ROUTER BITS • PROFESSIONAL PRODUCTION QUALITY *GUARANTEED*

WHEN ORDERING ANY THREE OR MORE *DEDUCT $1.00 EACH.* • FREE SHIPPING IN CONTINENTAL U.S.

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#601	Solid Carbide	1/8" Spiral Cutter	*Proper Adapter Will Be Supplied	1/8"	1/2"	1/4" *	$ 9.00
#603		1/4" Spiral Cutter		1/4"	3/4"	1/4"	$12.00
#903		1/4" Spiral Cutter		1/4"	3/4"	1/2" *	$12.00
#904		3/8" Spiral Cutter		3/8"	1"	1/2" *	$24.00
#905		1/2" Spiral Cutter		1/2"	1 1/2"	1/2"	$29.00
#530		3/16" Edge Beading	3/16" Dia. of Circle		1/2"	1/4"	$15.00
#531		5/16" Edge Beading	5/16" Dia. of Circle		1/2"	1/4"	$15.50
#350		1/8" Round Over	1/8" R	3/4"	3/8"	1/4"	$11.00
#351		3/16" Round Over	3/16" R	7/8"	1/2"	1/4"	$11.00
#230		1/4" Round Over	1/4" R	1"	1/2"	1/4"	$12.00
#353		5/16" Round Over	5/16" R	1 1/8"	1/2"	1/4"	$14.00
#209		3/8" Round Over	3/8" R	1 1/4"	5/8"	1/4"	$15.00
#355		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#655		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/2"	$17.00
#656		3/4" Round Over	3/4" R	2"	7/8"	1/2"	$21.00
#199		Multiform Moulding	Unlimited Patterns	2 1/4"	2"	1/2"	$40.00
#205		1/4" Cove	1/4" R	1"	1/2"	1/4"	$12.00
#206		3/8" Cove	3/8" R	1 1/4"	9/16"	1/4"	$13.00
#207		1/2" Cove	1/2" R	1 1/2"	5/8"	1/4"	$14.00
#643		1/2" Cove	1/2" R	1 1/2"	5/8"	1/2"	$15.00
#208		3/4" Cove	3/4" R	1 7/8"	3/4"	1/2"	$26.00
#231		5/32" Roman Ogee	5/32" R	1 1/4"	15/32"	1/4"	$16.00
#232		1/4" Roman Ogee	1/4" R	1 1/2"	3/4"	1/4"	$17.00
#506		1/2" Pattern	Flush Trim	1/2"	1"	1/4"	$15.00
#508		3/4" Pattern	Flush Trim	3/4"	1"	1/4"	$17.00
#366		1/8" Slot Cutter	3/8" Deep	1 1/4"	1/8"	1/4"	$14.00
#368		1/4" Slot Cutter	3/8" Deep	1 1/4"	1/4"	1/4"	$14.00
#204		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/4"	$13.00
#670		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/2"	$14.00

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#211		3/8" Core Box	round nose	3/8"	3/8"	1/4"	$10.00
#212		1/2" Core Box	round nose	1/2"	11/32"	1/4"	$13.00
#418		3/4" Core Box	round nose	3/4"	5/8"	1/4"	$15.00
#213		1" Core Box	round nose	1"	3/4"	1/2"	$17.00
#548		Lockmitre		2"	7/8"	1/4"	$32.00
#214		1/4" Straight	plunge cutting	1/4"	3/4"	1/4"	$ 6.50
#216		3/8" Straight	plunge cutting	3/8"	1"	1/4"	$ 6.50
#474		1/2" Straight	plunge cutting	1/2"	1"	1/4"	$ 7.00
#219		3/4" Straight	plunge cutting	3/4"	1"	1/4"	$ 9.50
#779		3/4" Straight	plunge cutting	3/4"	1 1/2"	1/2"	$10.00
#462		1/2" Bull Nose	1/2" Dia. of Circle		3/4"	1/4"	$16.00
#464		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/4"	$21.00
#764		3/4" Bull Nose	3/4" Dia. of Circle		1"	1/2"	$21.00
#545		Tongue & Groove	Straight	1 5/8"	1"	1/4"	$29.00
#845		Tongue & Groove	Straight	1 5/8"	1"	1/2"	$29.00
#546		Tongue & Groove	Wedge	1 3/16"	1"	1/4"	$29.00
#846		Tongue & Groove	Wedge	1 5/8"	1"	1/2"	$29.00
#450		1/8" Beading	1/8" R	3/4"	3/8"	1/4"	$11.00
#233		1/4" Beading	1/4" R	1"	1/2"	1/4"	$13.00
#454		3/8" Beading	3/8" R	1 1/4"	5/8"	1/4"	$15.50
#455		1/2" Beading	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#500		3/8" Flush Trimming		3/8"	1/2"	1/4"	$ 7.00
#501		3/8" Flush Trimming		3/8"	1"	1/4"	$ 7.50
#503		1/2" Flush Trimming		1/2"	1"	1/4"	$ 8.50
#221		1/2" Flush Trimming		1/2"	1 3/16"	1/2"	$ 8.00
#558		Thumbnail		1 3/16"	3/8"	1/4"	$18.50
#858		Thumbnail		2 1/2"	3/4"	1/2"	$35.00
#579		Molding Plane		1 1/8"	1 3/4"	1/4"	$31.95
#879		Molding Plane		1 1/8"	1 3/4"	1/2"	$31.95

FREE — NEW 32-PAGE CATALOGUE • **While in the Philadelphia Area Visit Our Fully Stocked Showroom** (call for easy directions)

CONTROL THE SPEED OF YOUR ROUTER

ROUT AT THE SPEED THAT GIVES THE BEST RESULTS WITH THE WOOD AND BIT YOU ARE USING!

~~$39.95~~ **SALE $29.95** Order Item #197

FEATURES:

- **Works With All Routers 3¼ HP or less - 120V 15 Amp.**
- **Full Horsepower and Torque at All Speeds.**
- **Gives Your Router a Feature Only Available on Routers Costing Hundreds of Dollars!**

FORSTNER BITS

For *Perfect* Holes

Forstner bits are designed to drill flat bottom or through holes cleanly in end grain, thin stock, veneers and regular stock. Comes with its own attractive wood box and includes the following sizes: 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1 1/8", 1 1/4", 1 3/8", 1 1/2", 1 5/8", 1 3/4", 1 7/8", 2", 2 1/8".

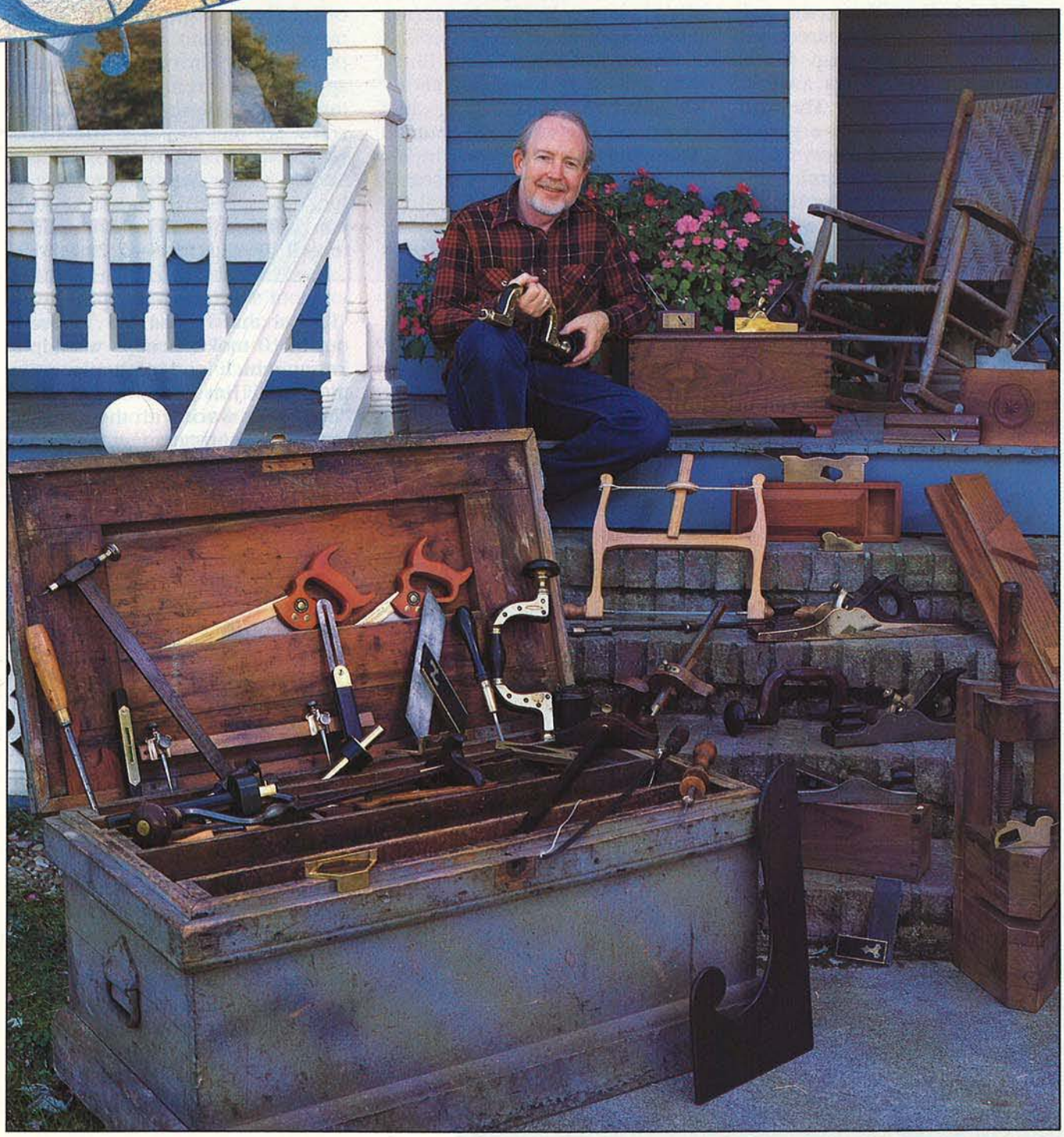
Regularly $99.95 ***Special Sale 16 Piece Set*** **$79.95** Order Set #314

©1993

To order by Master Charge, Visa, or Discover Call Toll Free, 7 Day - 24 Hour Order Service **1-800-533-9298** or send check to: **MLCS Ltd. P.O. Box 4053 DU, Rydal, PA 19046**

HE MAKES OLD TOOLS SING AGAIN

In the Ozark foothills, Jim Price harmonizes with yesteryear



HE MAKES OLD TOOLS SING AGAIN

Settled by Scotch-Irish immigrants in the early 1800s, Ripley County, Missouri, claims a sparse population of 12,500 people. In the southeastern corner of its timber-covered hills lies tiny Naylor (pop. 600). Here, time doesn't exactly stand still, but it sure does drag its feet.

At Lola's Drug Store, the only cafe on Naylor's main street, you can't get chili or soup in the summer nor iced tea and ice cream after Labor Day. The regulars, who make Lola's a part of their daily routine, know not to order items out of season.

And the regulars represent quite a range of interests, too. There's David, an expert at turning plain picture frames into elegant gilded ones. Then there's George, who fancies saddlery, and Bernard, a school prinicpal who makes fiddles. Doug also drops in when he isn't out cutting pecker poles, the local name for post-and-pole timber. And it would be an off-day if Jim Price didn't come by for breakfast, lunch, and mid-afternoon coffee.

James E. (Jim) Price, Ph.D. may be—at one time or another—either Naylor's mayor, chief of police, fire chief, or councilman. Beyond his civic duties, Jim, 48, holds down a research associateship in anthropology with the University of Missouri and heads the institution's Southeast Missouri Archeological Research Center, a one-man office handily headquartered in Naylor. Oh, Jim also collects old woodworking tools—nearly 25,000 of them at present!

He knows how to use them, too, and does so nearly every day. In fact, the state of Missouri officially recognizes Jim as a master craftsman and makes it possible for him to take on an apprentice every once in awhile just to pass along the old hand ways. We met Jim at a Midwest Tool Collectors' convention in Illinois. "Come on down to Naylor," he suggested, "and I'll show you a thing or two about old tools." We did.

Print this article

With the board locked in the miter jack, Jim trims it with a special miter plane that's made to cut end grain.

"I'll bet that maybe, uh . . . seven out of 10 tool collectors wouldn't know which end of a plane to pick up," Jim Price says firmly. "Not many work with them, that's for sure." That statement made, he digs deeper into his tool chest.

Jim's at work in his shop, a reconstructed carriage house that sits only a few steps from the vintage Victorian (it's on the National Register of Historic Places) that he and Cynthia, his wife, call home. Both buildings date to 1892, when a timber company built them as models to increase sales of their forest products.

With a cache of tools that matches the age of his surroundings and skills that prove his mastery of them, Jim has an appreciation for the past that approaches reverence. In fact, he makes the past come alive in secluded Naylor. In his hands, tools again sing the praises of all-but-forgotten craftsmanship.

A case for hand tools

In Ripley County, the name Price goes back to the first settlers of

1814. And according to Jim, he would have broken tradition if he hadn't returned to the county after college. "No Price has ever moved away," Jim says.

From his grandfather, father, uncles, and neighbors, Jim learned how to use hand tools to work wood. He's still amazed at his father's dexterity with traditional Ozark implements.

"He's an old Ozark hillbilly," Jim says, his voice conveying both fondness and respect. "And he can make a boat paddle from a sassafras board with nothing but a double-bitted ax—shaving it down and whittling with it just as slick as can be. He's good."

Like father, like son, for Jim's command of bench tools leaves nothing to desire. "I use everything from very primitive tools to those of the Colonial period, to the tools of the 1880s—and love every minute of it," he comments.

What Jim doesn't say is that he's infatuated with their history, too. Grasping a brass-bound brace from its place in his wooden chest, Jim holds it up for inspection. "An apprentice would make his tool chest as the final test of his joinery," he explains. "Then, the master would give him a tool or two—usually something of high quality—like this.

"Of course, that tool was intended to be [an] advertisement," Jim continues, turning the gleaming brace, "because there is no utilitarian reason to make a tool like this. But, you see, most people couldn't see the actual shop, and there were guild secrets to hide, so craftsmen would display a fancy tool where it could be seen. It was just flash, just [an] advertisement."

Replacing the brace in the chest, Jim picks up the plane he originally sought. He then secures a pine board in place with bench dogs, looks up, and comments. "Most of your modern woodworkers think these hand tools are slow—they are not. I can take this dado plane and have the doggone thing [the dado] done while a guy is still doing all the setup for a router."

He makes a few passes on the board with the plane, then pauses. "If you are doing one-of-a-kind things, hand tools are faster than power tools," he sums up. Then he adds in a softer voice, "but, if I'm going to rip an 8′ board, I'll do it on the tablesaw."

Listen to the song of the saw

Walking over to a no-less-than-antique workbench and its repository of handsaws, Jim picks one, then positions a hand near its handle and the other close to its tip. A flip of his wrists and the blade responds with an erie, vibrating *eeeeeeeeeeeeh*. "What's that tell you?" he asks.

"The quality of the steel," he quickly answers. "You can tell how good the saw is by how it sings—the higher and louder the pitch, the better," he explains.

Finished with the saw lesson, Jim wanders the length of his long workbench. He stops, puts his finger to his forehead, and announces: "There's lots of tricks like that with hand tools, but what's important is using them. I'm going to show you one of the first things that an apprentice learns—how to unwind a board."

Rummaging through a pile of lumber for just the right board, Jim relates his preference in wood. "I like the old air-dried stuff. The difference, as I see it, is that the air-dried wood isn't as brittle as kiln-dried. It still has some flex to it. Kiln-dried wood is caved in. The cells shrink and collapse so that it splits."

After selecting a length of walnut sufficiently bowed to use as an example, Jim says, "Unwinding means straightening or squaring a warp. And with hand tools, there's a definite procedure."

According to this hand-tool craftsman, unwinding a board by

Continued

Each bench plane has a purpose and is used in order when straightening a board. Left to right: scrub plane, try plane, fore plane, and smoothing plane.

hand rather than with a power planer results in wood that's more stable in service. "By the time you get it in line—with two planed surfaces and dimensioned—there's no stress left."

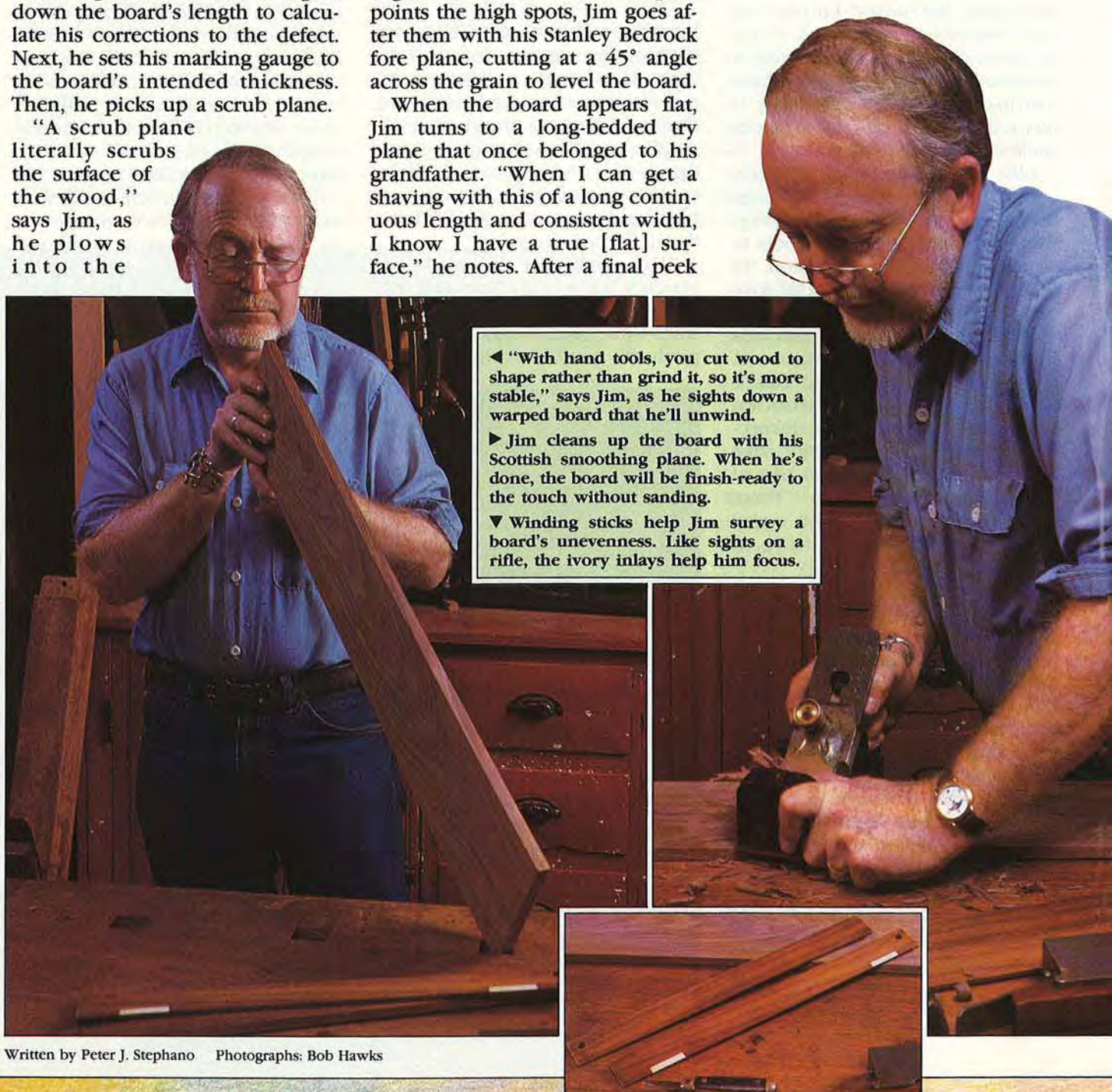
So, where do you start? Jim's piece of walnut has a slight bow and twist, so he must flatten it by removing wood at both ends of the bottom side and at the center of the top side. But first, he sights down the board's length to calculate his corrections to the defect. Next, he sets his marking gauge to the board's intended thickness. Then, he picks up a scrub plane.

"A scrub plane literally scrubs the surface of the wood," says Jim, as he plows into the board at a slight angle to the grain. Finished with one end, he turns the board around and repeats the planing. Finally, he shifts the action to the center of the board. Finished with the scrub plane, Jim brings out his winding sticks, as shown in the photo *below*. "These tell me if the board is in line. The ivory targets help me determine where it's high," he notes. Once he pinpoints the high spots, Jim goes after them with his Stanley Bedrock fore plane, cutting at a 45° angle across the grain to level the board.

When the board appears flat, Jim turns to a long-bedded try plane that once belonged to his grandfather. "When I can get a shaving with this of a long continuous length and consistent width, I know I have a true [flat] surface," he notes. After a final peek down the board to the winding sticks, Jim switches to another plane, as shown *below*. "This smooth plane finishes. Absolutely no sanding required!"

Substitute shapers

In his collection, the Missouri master craftsman has a multitude of molding planes—thin, wooden-bodied tools, each with its iron



◀ "With hand tools, you cut wood to shape rather than grind it, so it's more stable," says Jim, as he sights down a warped board that he'll unwind.

▶ Jim cleans up the board with his Scottish smoothing plane. When he's done, the board will be finish-ready to the touch without sanding.

▼ Winding sticks help Jim survey a board's unevenness. Like sights on a rifle, the ivory inlays help him focus.

Written by Peter J. Stephano Photographs: Bob Hawks

ground to produce a unique profile. Before the introduction of combination planes, woodworkers found it necessary to keep many molding planes on hand to satisfy their customers' preferences for trim patterns.

Jim's research has, however, unearthed a simpler tool for making custom accents. It's called a scratch stock. Jim explains:

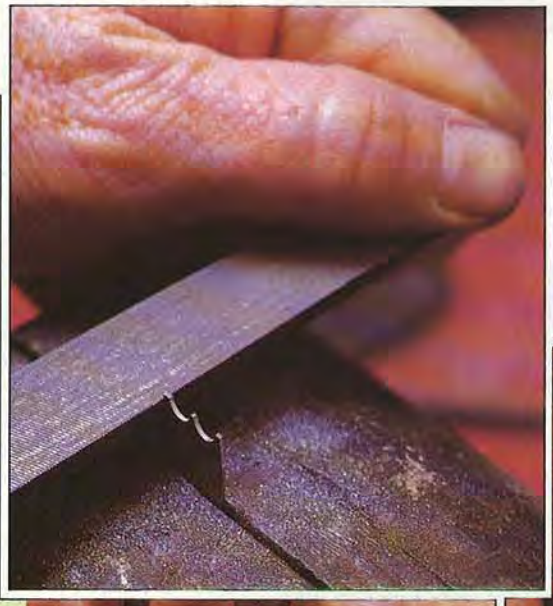
"Basically, a furniture- or cabinetmaker would take a short length of soft steel about 1" wide and file a profile on one end. Secured in a wooden handle by a pair of thumbscrews, the blade could then be pushed and pulled across the wood again and again, like a scraper, to scratch out the profile [see photo *below*]. That's how many of the details in Victorian furniture were created."

"To make a scratch stock," Jim advises, "go buy a cheap saw kit—the kind that has three blades for the same handle—at a discount store. Then, with a file, score a line on the blade where you want to cut it. Next, clamp the blade into a vise and bend it back and forth along the scored line. It'll soon snap off clean. All you have to do from there is file a profile on one end and make a handle. Surprisingly, they last a long time."

And not surprisingly, so do most old tools, even in frequent use. Jim has a philosophy regarding that and his collecting. "I never buy a tool I can't use," he says. "And I never buy a tool that I won't use. After all, they weren't new when they came to me. So using them won't hurt 'em none."

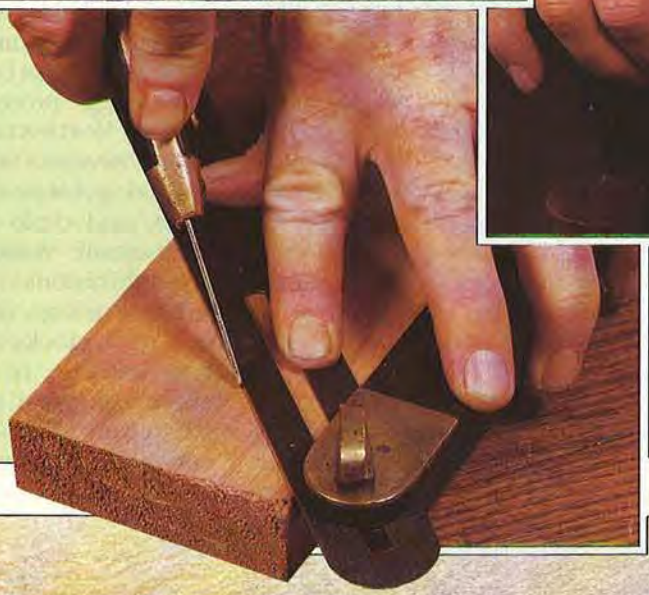
Interested in old tools? Drop Jim a line

Jim often has observed folks who went out and bought an old tool, such as a plane, and then got discouraged because they didn't know how to sharpen or set it. His advice: "The best thing is to consult someone who knows old tools before you buy," he says. "There *are* certainly enough members in the Midwest Tool Collectors Association [M-WTCA]." For information, write: *James E. Price, M-WTCA Treasurer, Box 6, Naylor, MO 63953.*



◀ To create a profile on a scratch-stock blade, Jim clamps it in a vise, and then attacks the soft metal with a file to get the desired pattern.

▼ The scratch stock's wooden handle has an adjustable fence that guides it straight along the board. Pushing and pulling quickly cuts a profile.



◀ With his scribing knife, Jim marks a miter for sawing. "Lay the knife in place first, then bring the straightedge up to it."

DOWN-UNDER DESK CLOCK

THIS CLOCK WILL GROW ON YOU FROM START TO FINISH

We used the following tools and supplies:

Stock

Banksia seed pod (see our Buying Guide source *right*)

Lathe tools

3–4″ faceplate, ½″ bowl or spindle gouge, parting tool, Jacobs chuck for tailstock (optional)

Lathe speeds

Boring clock hole:
400–500 rpm

Turning and sanding:
1,100–1,400 rpm

BUYING GUIDE

Banksia pods. Banksia seed pods, three for $18.50 ppd. in U.S. One Good Turn, 3 Regal St., Murray, Utah, 84107.

Clock insert. Quartz clock insert with moon-phase dial and date, order no. 71212, $21.45. Quartz insert without moon-phase dial and date, (not shown) no. 71213, $10.80. Both prices ppd. in U.S. Klockit, P.O. Box 636, Lake Geneva, WI 53147 or call 800/KLOCKIT.

Project Design: ©Jerry Brownrigg Illustrations: Mike Henry Photographs: Wm. Hopkins

Print this article

Be ready to field a lot of questions when your friends spot this different-looking desk clock. Turned from the seed pod of an Australian tree, it's sure to draw long looks, even from people who already know what time it is.

What about this odd pod?

A banksia seed pod doesn't look like something you'd even want to pick up, let alone use for woodturning stock. But looks *can* deceive. Inside the nubby, grayish pod, which slightly resembles a multimouthed creature out of science fiction, you'll discover extraordinary textures and patterns set off by random oval openings.

The otherworldly pods grow on banksia trees, a group of evergreens native to western Australia. Some are shrublike, but bull banksias, the largest, grow to about 30′ tall. Their foot-long leaves, shown in the photo *above left*, feel like holly and look like coarse, double-edged saw blades.

The trees bear yellow bottlebrush flowers that mature into seed pods as big around as a pop can and half again as long. Years ago, Australian woodturners decided to give the pods a whirl, figuring they would be an intriguing material for decorative turnings. And how right they were.

Now, American turners have discovered this Australian oddity. One of the pioneers of banksia-pod turning in the U.S. is Jerry Brownrigg, professor of technology at Northwestern Oklahoma State University in Alva. His banksia-pod goblets, urns, bowls, bud vases, and desk clocks never fail to fascinate visitors at woodturning exhibitions.

Turning one of Jerry's banksia-pod desk clocks makes a great introduction to this unusual material. And you'd be hard pressed to come up with a better conversation piece.

Cut the pod apart

Start by cutting the tapered ends off the pod. Use a bandsaw, or mount the pod between centers on your lathe and remove the ends with your parting tool. Cut as close to the ends as possible.

Pick one of the clock profiles, *right*, and divide the pod into shorter pieces—about 3–3½" long for the conical clock, 2–2½" for the flat-back clock. Cut and sand one end flat on each piece.

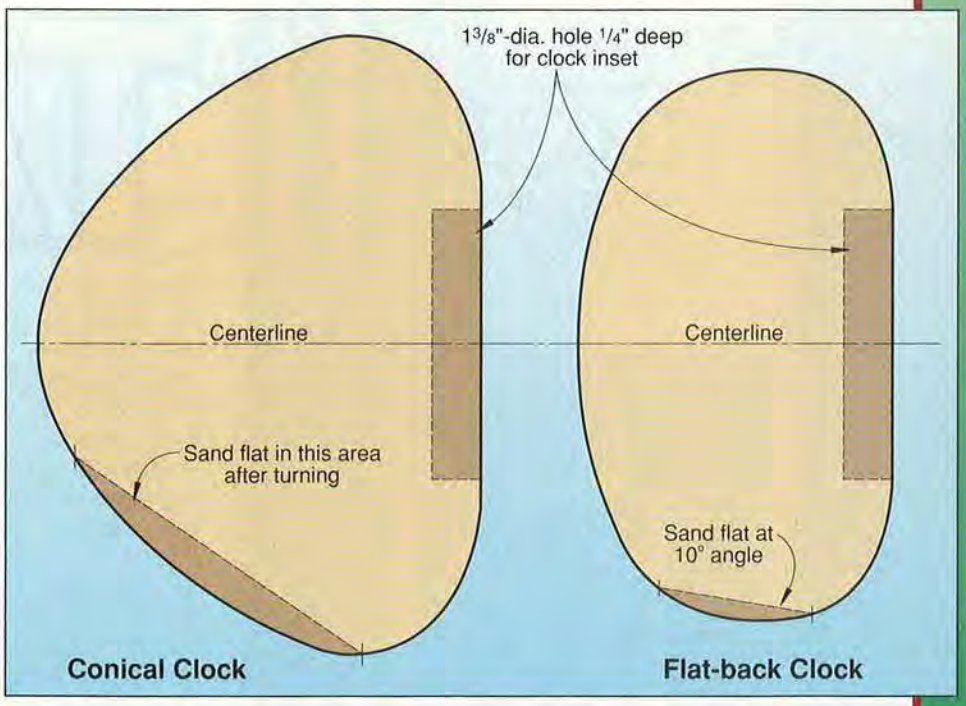
"Most projects—especially the clocks—look better if you center the pod's distinctive markings in your turning," Jerry comments. To do that, place the pod with the flat end up. Then centerpunch or drill a shallow ⅛"-diameter hole at the pod's core. (Don't worry, you'll know it when you see it.)

A nail through a hole in the center of the auxiliary faceplate acts as temporary index for mounting the pod.

Next, attach a 1–2"-thick scrapwood auxiliary faceplate to a 3–4"-diameter lathe faceplate. With the faceplate assembly mounted and the lathe running, find and mark the center. Remove the assembly and drill a ⅛" hole through the mark.

Now, slip a 6d box nail through the hole from the back as shown *above*. Apply cyanoacrylate adhesive to the end of the pod with the hole drilled in it. Then, place the hole in the pod over the end of the nail and bring the pod and faceplate together.

Remove the nail, let the glue cure, and install the mounted workpiece on the lathe. Bring the tailstock up to support the pod.



It's time to turn a clock

Turn the front of the body (the tailstock end of the pod) to shape. With the lathe running at 1,100–1,400 rpm, Jerry turns the clock body with a ½" bowl gouge, but a spindle gouge would work, too.

You'll encounter a variety of textures, from fuzz (which makes messy dust) to the hard seed-pocket linings. All in all, though, turning the pod isn't much different from turning hardwood. As always, keep your tools sharp.

Turn the side and back profile, leaving a supporting tenon of about ¼ of the pod's diameter at the back. Don't cut too deeply into the sides—leave some of the unusual surfaces showing. "I like to leave some natural outside texture in the turning," Jerry says. "And exposed fuzz, if the pod and design permit, adds interest."

Slide the tailstock back, and replace the tail center with a Jacobs chuck to drill the hole for the clock insert. Reduce the lathe speed to 400–500 rpm. Then, with a 1⅜" Forstner bit in the chuck, bore the hole ¼" deep into the front of the clock body.

If you don't have a Jacobs chuck for your lathe, remove the faceplate and turning from the lathe. Then, center it under a 1⅜" Forstner bit chucked into your drill press. Grip the faceplate with a handscrew clamp, and bore the hole. Remount.

Running the lathe at 1,100–1,400 rpm, sand the turning with 150-, 220-, and 320-grit sandpaper. Slide the tailstock up to support the turning while you complete the back profile. Cut to a small supporting tenon (¼" or so), and then sand the back.

Separate the turning from the waste with a backsaw or coping saw. Sand to match the contour and remove the saw marks.

With a disc sander, sand a flat area 1–1½" wide on the bottom of the clock. Slant the flat-back clock about 10° back from vertical.

Finish the turning with a thin, transparent finish (Jerry uses Waterlox, a tung-oil product available from Craft Supplies USA, 801/373-0917). Brush it on with a small artist's brush, but don't put it directly on fuzzy areas. Press the clock insert into place to complete the project.

Written by Larry Johnston Banksia foliage courtesy Des Moines Botanical Center

Turn-of-the-century TALL

Charles Rennie Mackintosh, a Scottish architect and designer of furniture and interiors from 1897 through 1918, first introduced his tall clock at a Berlin, Germany, design exhibit in 1905. The design you see here is my interpretation of the so called "Macintosh clock."

Although the original appeared to be about 8′ tall, our version stands 6′, a more appropriate scale for today's homes. I also designed a custom clock face that mirrors the original. Our clock-parts source (see the Buying Guide) worked with us to develop copies of the face for *WOOD*® magazine readers. The inexpensive but reliable electronic movement keeps the price of this clock hundreds under a store-bought unit.

Print this article

A. R. Downing
Design Editor

Start with the clock case

1 From 1 1/16″-thick oak, cut the case sides (A) ¼″ wider and 1″ longer than the size listed in the Bill of Materials. (We edge-joined narrower stock to form the wide side panels.) Later, scrape off the excess glue and trim the case sides (A) to finished size.

2 Cut the case-side fronts (B) to size plus 1″ in length. Cut the top and bottom panels (C), top panel front (D), and bottom front rail (E) to size.

3 Cut the rabbets and dadoes in the case sides (A) and top and bottom (C) where shown and to the sizes shown on the Base and Case drawing.

4 With the surfaces flush and an even overhang on both ends, glue and clamp a case-side front (B) to the front edge of each case side (A). Later, trim the ends of the front pieces (B) flush with the ends of the side pieces. Sand the side panels (A, B) smooth on both surfaces.

5 Center, glue, and clamp the top panel front (D) to the front edge of the top panel. (Verify that the front piece sits in ½″ from the ends of the top panel.)

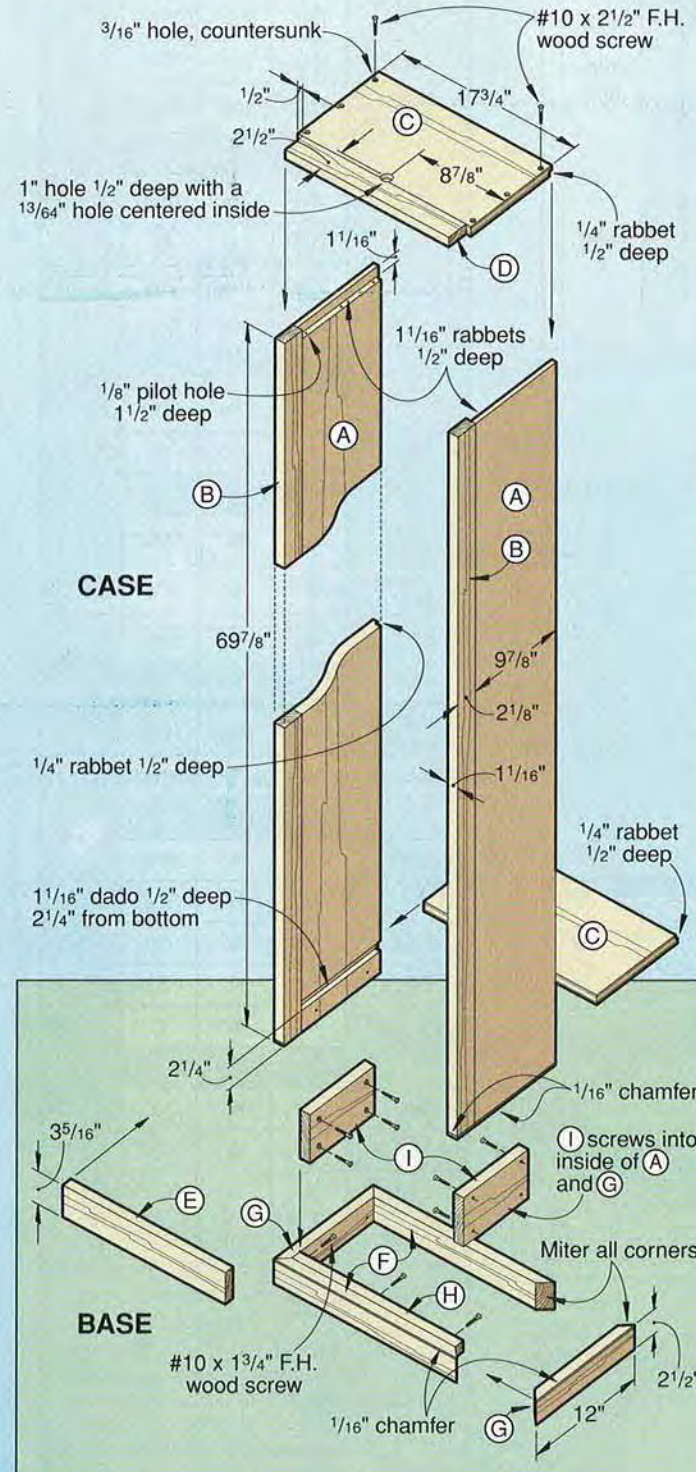
6 To house the clock-face pin later, drill a 1″ finger access hole ½″ into the top panel where shown on the Case and Base drawing.

7 Glue and clamp the case (A, B, C, D, E), using a framing square to check for square.

Next, let's add the base

1 Cut the base front and back (F) and sides (G) to size, miter-cutting both ends of each.

CLOCK BUILD THIS BEAUTY FOR UNDER $200



2 Glue and clamp the base frame (F, G) together, checking for square.

3 Sand a 1/16" chamfer along the top edges of the base and along the bottom edge of the clock case sides (A, B). See the Base Mounting detail for reference.

4 Cut the base cleats (H, I) to size. Drill and countersink the mounting holes, and glue and screw the front cleat (H) to the back surface of the front base piece (F). Then, drill the mounting holes through the side cleats (I). With the bottom edges flush, glue and screw the side cleats to the base sides (G).

5 Fit the base onto the bottom of the clock case, and screw (but do not glue) the base assembly to the bottom of the clock case.

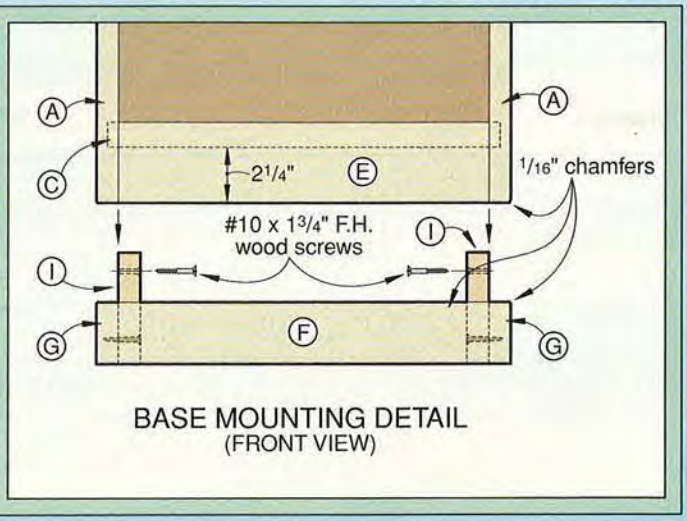
And now for the back and dust cover

1 Measure the rabbeted opening, and cut the back (J) to size from 1/4" oak plywood.

2 Drill countersunk mounting holes through the back piece and into the case sides (A) and top and bottom panels (C) to the hole sizes shown on the Exploded View drawing. Using the same drawing for location, mark the location and cut a 6"-diameter access hole in the back piece (J).

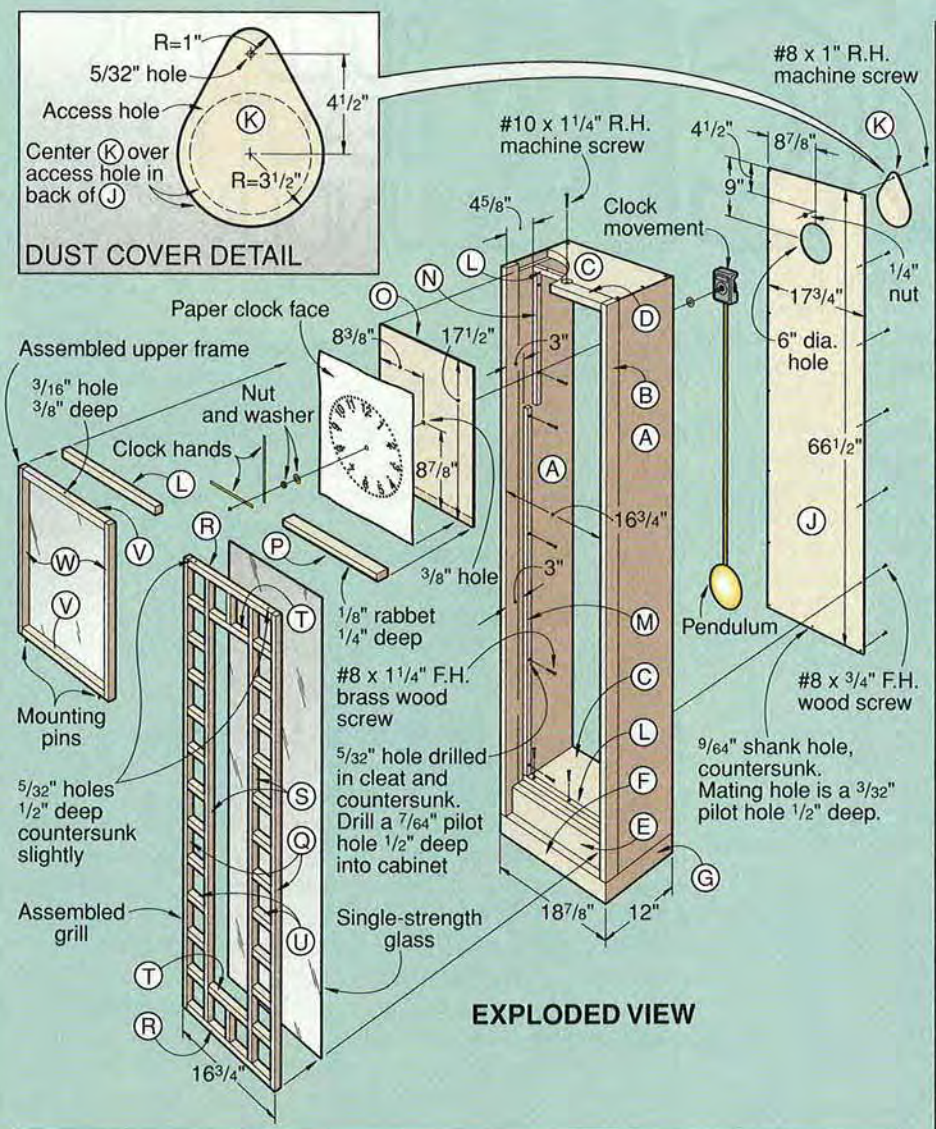
3 Using the dimensions on the Dust Cover detail accompanying the Exploded View drawing, lay out the dust cover shape (K) and mounting-hole centerpoint on a piece of 1/4" oak plywood. Cut the dust cover to shape, drill the mounting hole, and fasten the dust cover to the clock back (J).

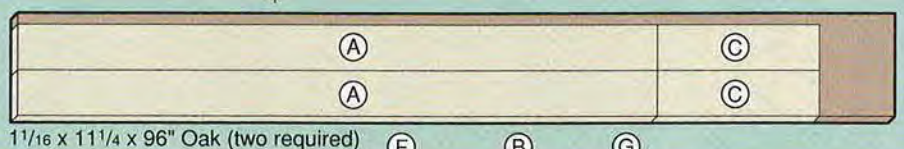
Continued



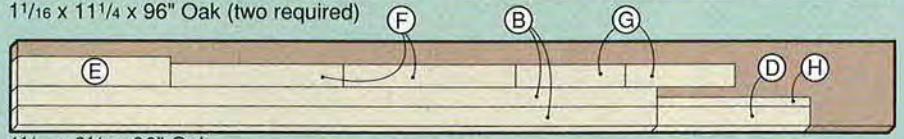
BASE MOUNTING DETAIL
(FRONT VIEW)

TALL CLOCK

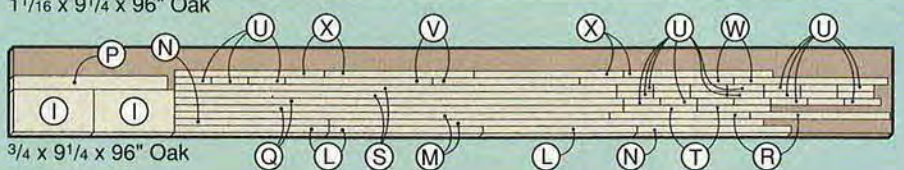




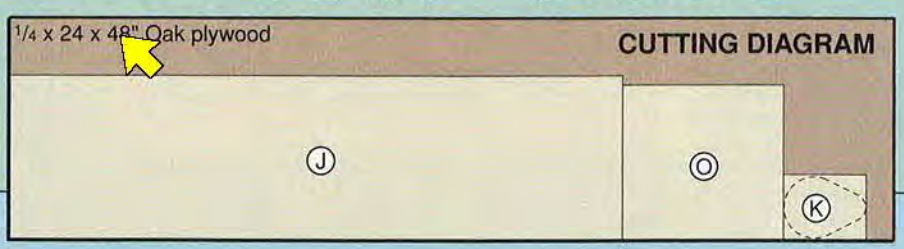
1 1/16 x 11 1/4 x 96" Oak (two required)



1 1/16 x 9 1/4 x 96" Oak



3/4 x 9 1/4 x 96" Oak



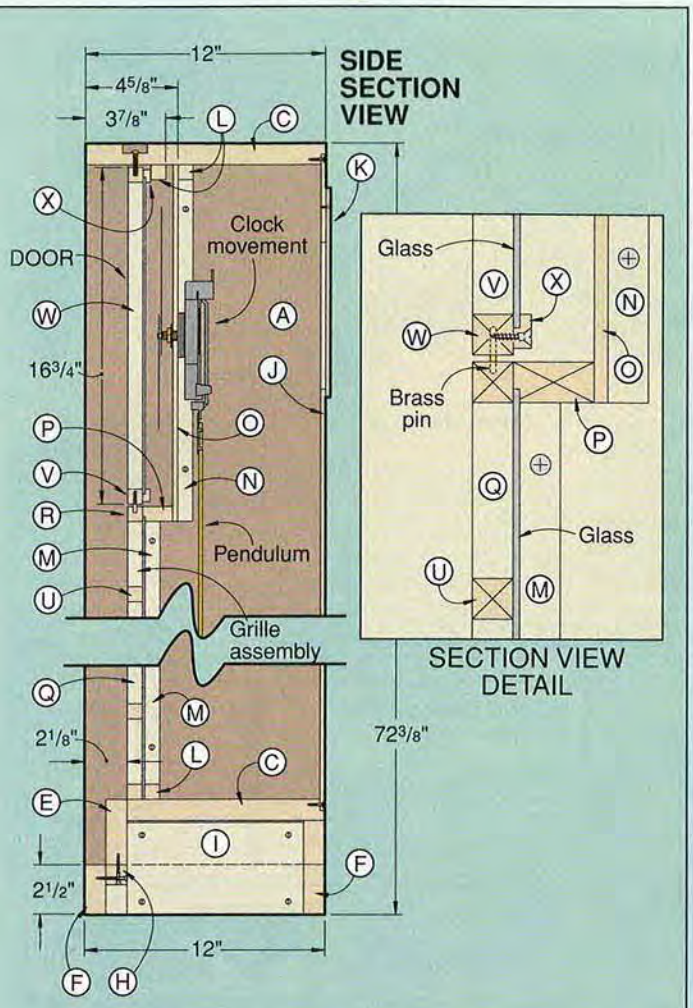
Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
CASE					
A* sides	1 1/16"	9 7/8"	69 7/8"	EO	2
B* fronts	1 1/16"	2 1/8"	69 7/8"	O	2
C* top & bottom	1 1/16"	9 7/8"	17 3/4"	EO	2
D top front	1 1/16"	2 1/8"	16 3/4"	O	1
E bottom front rail	1 1/16"	3 5/16"	16 3/4"	O	1
BASE					
F front & back	1 1/16"	2 1/2"	18 7/8"	O	2
G sides	1 1/16"	2 1/2"	12"	O	2
H cleat	1 1/16"	1 1/16"	16 3/4"	O	1
I cleats	3/4"	4 5/8"	8 3/4"	O	2
BACK AND DUST COVER					
J back	1/4"	17 3/4"	66 1/2"	OP	1
K cover	1/4"	7"	9"	OP	1
CLEATS					
L top & bottom	3/4"	3/4"	16 3/4"	O	3
M bottom sides	3/4"	3/4"	47 1/4"	O	2
N top sides	3/4"	3/4"	16 3/4"	O	2
CLOCK FACE					
O clock face backbrd.	1/4"	16 3/4"	17 1/2"	OP	1
P cleat	3/4"	1 1/2"	16 3/4"	O	1
GRILLE					
Q stiles	3/4"	3/4"	48 3/4"	O	2
R rails	3/4"	3/4"	15 1/4"	O	2
S stiles	3/4"	3/4"	48"	O	2
T rails	3/4"	3/4"	8"	O	2
U mullions	3/4"	3/4"	4"	O	24
DOOR					
V rails	3/4"	3/4"	16"	O	2
W stiles	3/4"	3/4"	16 3/4"	O	2
X stops	3/8"	1/2"	16 1/4"	O	4

*Initially cut parts oversized. Trim each to finished size according to the how-to instructions.

Materials Key: EO–edge-joined oak, O–oak, OP–oak plywood.

Supplies: #6 × 1" flathead brass wood screws, #8 × 3/4" flathead brass wood screws, #8 × 1 1/4" flathead brass wood screws, #6 × 3/4" flathead wood screws, #8 × 3/4" flathead wood screws, #10 × 1 1/2" flathead wood screws, #10 × 2 1/2" flathead wood screws, #8 × 1" machine screw with nut, #10 × 1 1/4" brass machine screw, 3/8" dowel stock, single-strength glass, stain, finish.



The cleats and clock face come next

1 From ¾"-square oak stock, cut the cleats (L, M, N) to lengths listed in the Bill of Materials.

2 Drill countersunk mounting holes through the cleats. (We did this on our drill press, and used a fence to keep the holes centered on the cleats.)

3 Clamp the cleats in place where shown on the Exploded View and Side Section drawings, and use the mounting holes already drilled in the cleats as guides to drill 7/64" pilot holes in the inside face of the case sides (A) and top and bottom panels (C). Screw (do not glue) the cleats in place.

4 With the top cleats (L, N) in place, measure the opening, and cut the clock face backboard (O) to size from ¼" oak plywood.

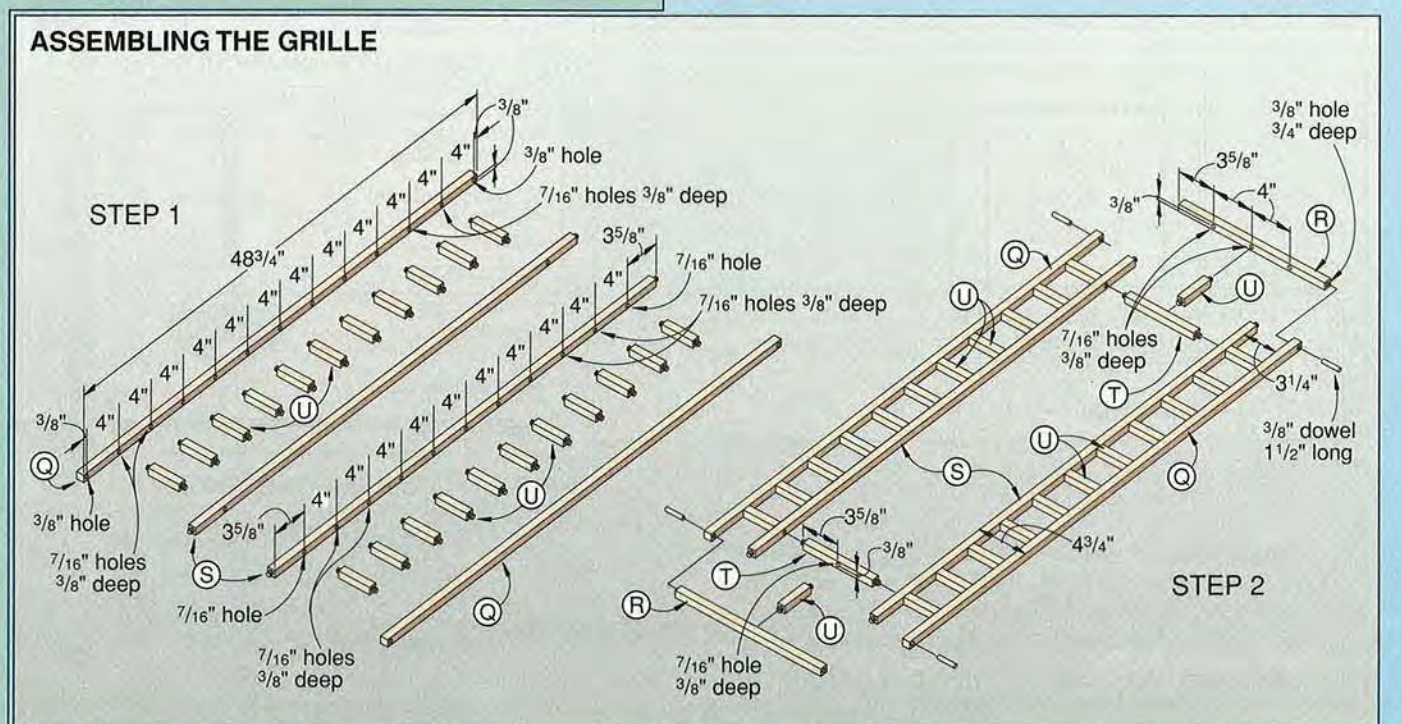
5 Cut the front cleat (P) to size. For housing the large glass panel later, cut a ⅛" rabbet ¼" deep along the bottom front edge where shown on the Section View detail accompanying the Side Section drawing at *left*. Then, glue the cleat to the bottom front edge of the clock face backboard (O) where shown on the drawing.

Next, machine the parts for the grille

1 From ¾"-thick stock, cut 5 pieces 78" long by ¾" wide for the grille parts (Q, R, S, T, U).

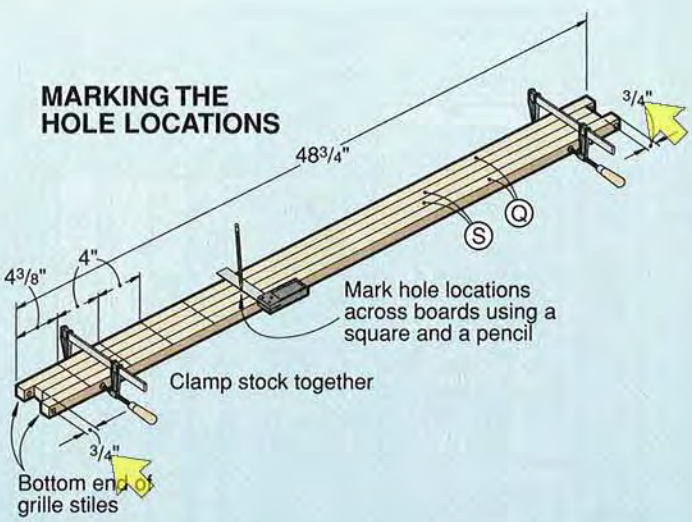
2 Crosscut the stiles (Q, S), rails (R, T), and the rails and mullions (U) to length. For consistent lengths, *which are critical,* use a stop when crosscutting the pieces. (We clamped a block of wood to our radial-arm saw fence to act as a stop.) Note that the rail, stile, and mullion lengths *include* the tenons.

Continued

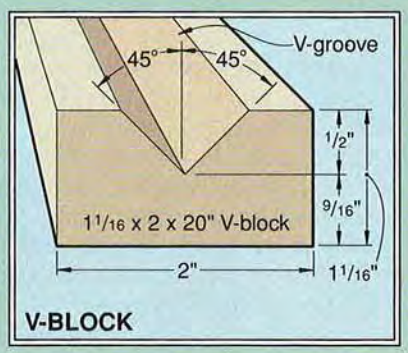


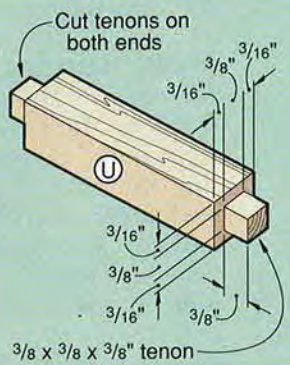
TALL CLOCK

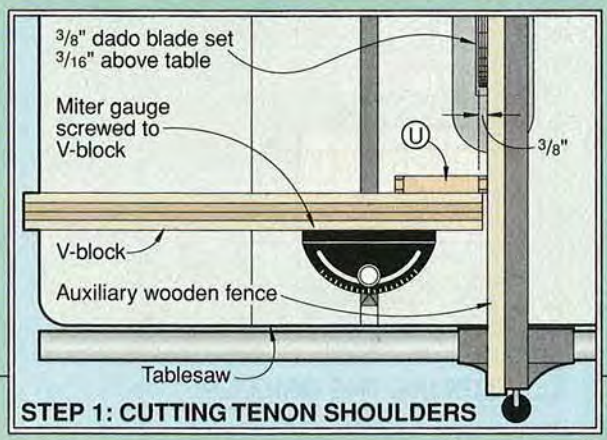
3 As shown at *right*, use a square to mark the centerpoints for the 7/16" mortises (7/16" holes 3/8"deep) on the stiles (Q, S) where dimensioned on Assembling the Grille drawing. Clamping the pieces together as shown helps ensure alignment for a square assembly.
4 Clamp a fence to your drill press and chuck a 7/16" brad-point bit in place. *Position the fence so the bit's centerpoint is centered on the 3/4"-wide stock.* Drill holes in Q and S where marked. Don't forget to drill the 3/8" holes at each end of the longer stiles (Q).
5 Cut a piece of 1 1/16"-thick stock to 2×20". Tilt your tablesaw blade 45° from vertical and cut a V-groove in the stock like that shown on the V-Block drawing. Mount the V-block to your miter gauge where shown on Step 1 of the three-step drawing *below*.
6 As shown in Step 1 of the three-step drawing *below*, cut 3/16" shoulders across all four ends of each rail (U, T) and inner stiles (S).

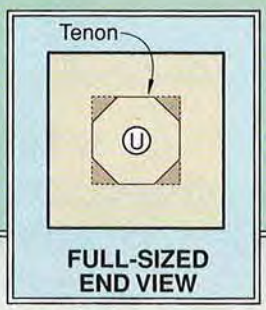


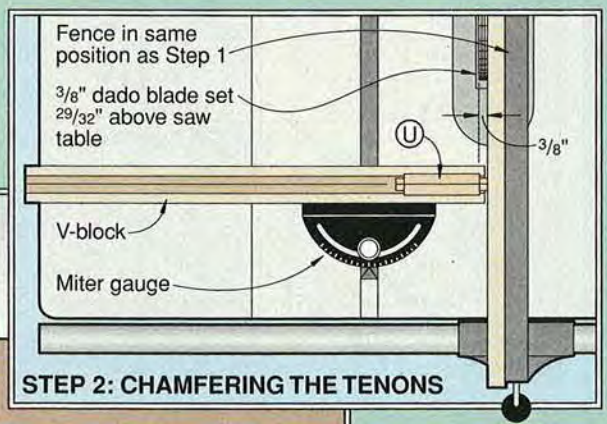
FORMING THE OCTAGONAL TENONS

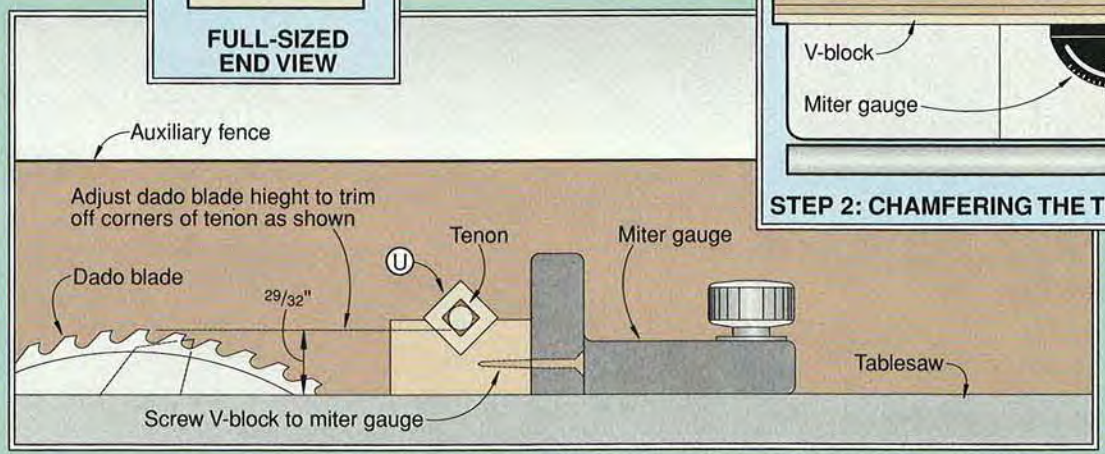


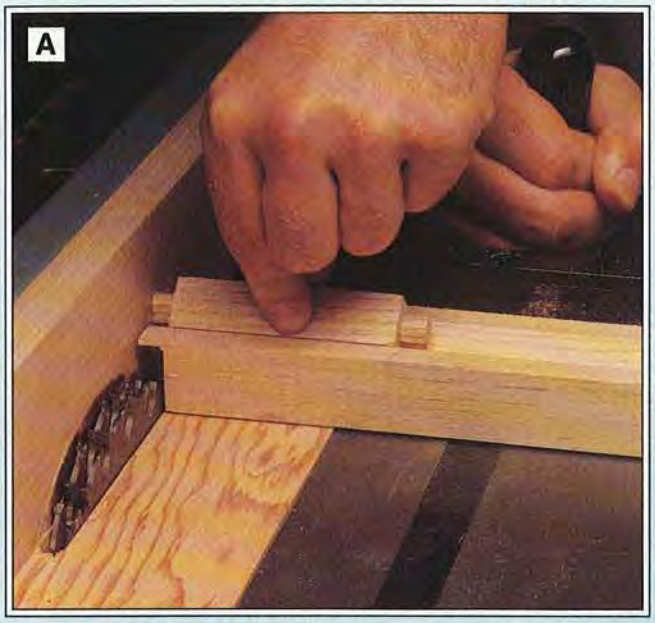




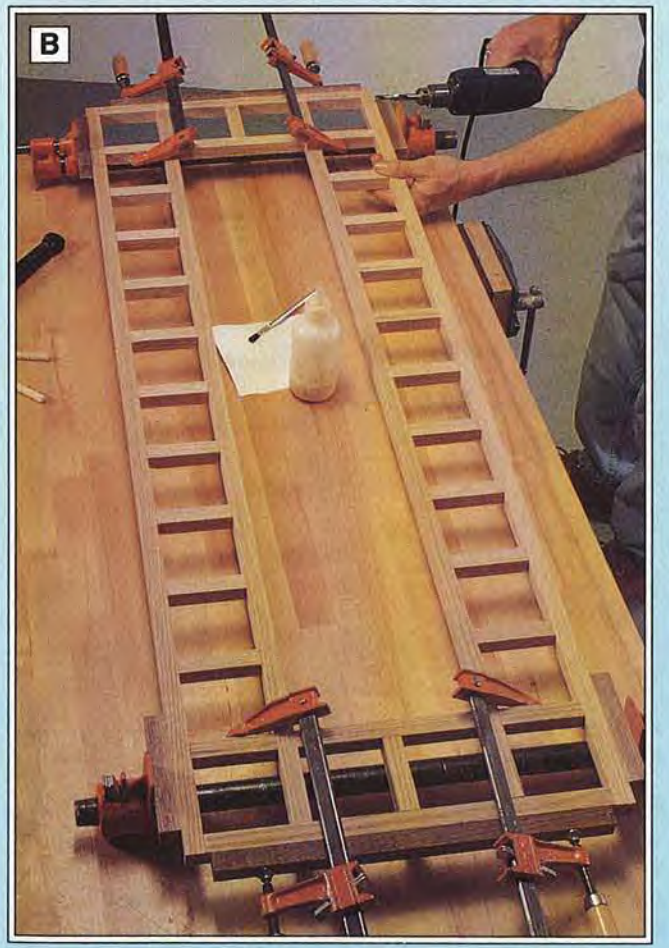








Using the V-block jig secured to your miter gauge for support, chamfer the edges of the square tenons.



Use the holes in the outer stiles as guides to drill dowel holes into the ends of the mating rails.

7 Now, as shown in Step 2 and the drawing titled Chamfering the Tenons, place the pieces in the groove in the V-block. Raise the blade 29/32" above the saw table, and chamfer each corner of the square tenon. See photo A for reference. Check that the octagonal tenons fit snugly into the 7/16" holes. If the fit is too tight, lightly sand the corners of the tenons.

Let's assemble the oak grille

1 To assemble the grille, start by gluing and clamping 11 rails (U) between one stile Q and one stile S. Check closely that the assembly clamps square and flat. Repeat for the other Q, S, U assembly. Immediately wipe off the excess glue with a damp cloth.
2 Glue and clamp the remaining pieces (R, T, U) between the two long outer grille assemblies as shown in photo B. Again, check that the assembly clamps square and flat.
3 As shown in photo B, use the previously drilled holes in the ends of the stiles (Q) as guides. Drill 3/8 holes 3/4" deep into the ends of the rails (R).
4 Inject a couple drops of glue into the holes, and drive 3/8" dowel stock through the stiles (Q) and into the ends of the rails (R). Trim the ends of the dowels flush with the outside edge of the stiles.
5 Later, remove the clamps, and sand both surfaces of the completed grille smooth.

Now, let's construct the oak-framed door

1 Cut the door frame pieces (V, W) to size. Drill the mortises and machine the tenons using the process used for grille members. Glue the door frame together, checking for square.
2 Next, cut two pieces of stock to 3/8 × 1/2 × 35" for the glass stops (X). Then, cut a 1/8" rabbet 1/4" deep the length of both pieces where shown on the Clock Face Door drawing and Side Section View drawing and Side Section detail. Miter-cut two 16 1/4"-long glass stops (X) from each 35"-long piece.
3 Clamp the stops in place to the back side of the door. Drill a trio of mounting holes through each stop and into the door.
4 Have a piece of single strength glass cut to fit in the door. Fit the door (without the glass) in place in the case top, and lightly clamp in place. Have a second piece of glass cut to fit against the front of the cleats (L, M). Tape the glass in place. Now, check the fit of the grille between the side assemblies (A, B) and against the front of the glass. If the grille is too wide, joint the edges slightly for a snug fit.

Making the door removable

Note: *For access to the clock face and hands, it's necessary to make the door removable. To do this, as described below, we devised a simple pinning method using brass wood screws.*

1 Mark the location of the grille on the case sides (A). Remove the grille, and large glass panel. Rein-

Continued

TALL CLOCK

stall the grille and clamp in place where marked. Now, glue the grille assembly to the case. Remove the cleats (L, M) from behind the glued-in-place grille. Remove excess glue with a damp cloth.

2 Clamp the door to the top edge of the grille with the front edges flush. As shown in photo C, drill 1/16" holes through the door bottom rail (V) and 1/2" into the top edge of the grille top rail (R). (Also, as shown in the photo, we attached four temporary feet to the clock base to prevent marring the bottom edge during final construction and finishing.)

3 Remove the door from the case. Using the 1/16" holes in the bottom door rail (V) as guides, drill 7/64" holes 1/2" deep into the bottoms of the door rail. Drive a pair of #8×3/4" brass wood screws into the holes until 1/4" (plus the head) protrudes out the bottom of the rail where shown in the Screw detail accompanying the Clock Face Door drawing. Cut or grind the heads off the screws where shown in the detail. File the cut ends smooth.

4 Change bits, and enlarge the 1/16" holes in the top edge of R to 3/16".

5 Fit the door into the opening. The trimmed screw shanks should fit into the 3/16" holes in the top edge of the grille rail (R). With the door in place, center a 13/64" bit in the previously drilled 1" finger access hole drilled in the case top (C, D), and drill through the top panel and 3/8" into the door top rail (V).

6 Later you'll use a #10×1 1/4" roundhead brass machine screw to pin the top of the door in place.

Apply the stain and finish, then add the face and movement

1 Finish-sand all the pieces. Then, stain all the parts except the front surface of the clock face backboard (O). We'll attach the paper face to this area later.

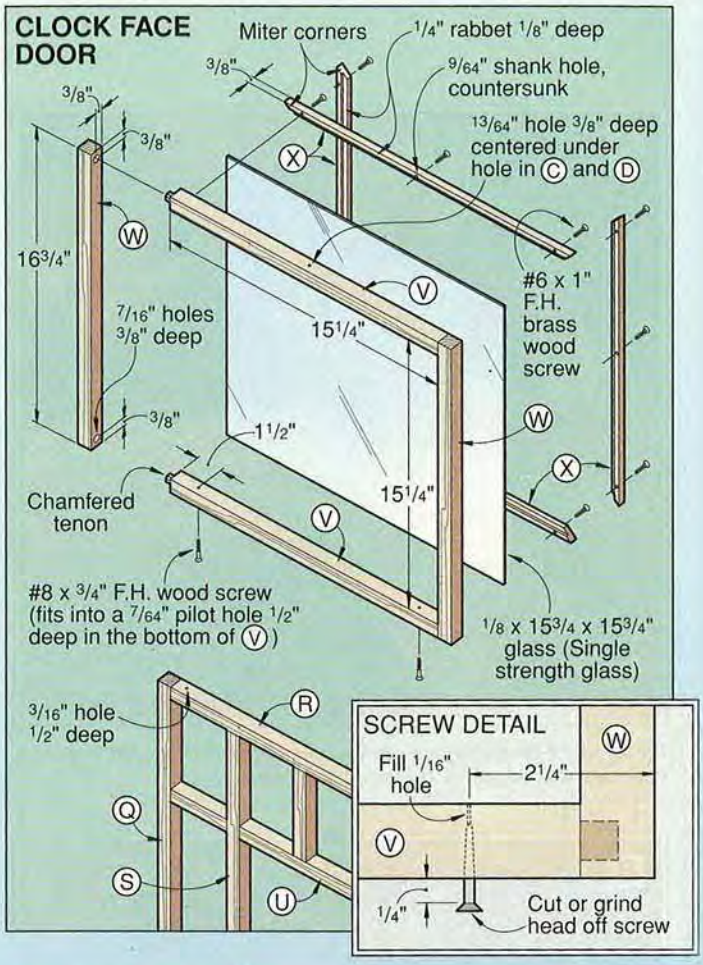
2 Apply finish to all surfaces except the clock face.

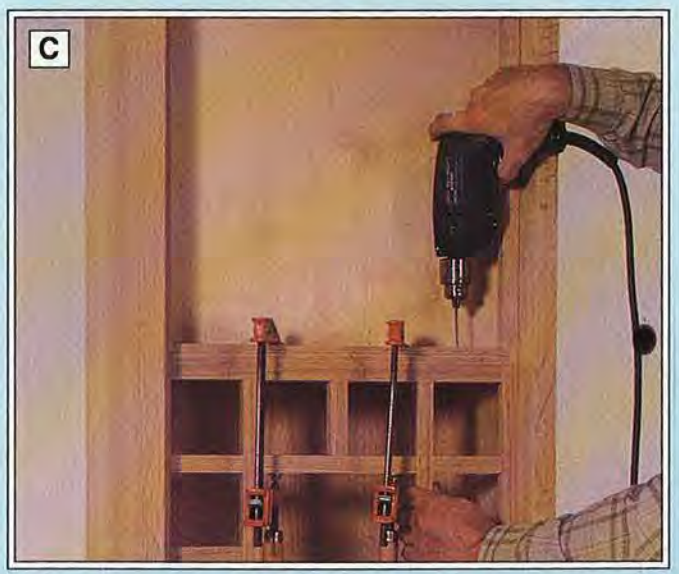
3 Apply spray-on adhesive to the back surface of the paper clock face supplied with the kit described in the Buying Guide. With the edges flush, carefully apply the paper face to the front of the clock face (O). Rub out any bubbles. Using a brad-point or Forstner bit, drill a 3/8" shank hole through the marked center of the paper pattern and plywood clock face backboard (O).

4 Position the large piece of glass against the backside of the grille. Reinstall the cleats to hold the glass in place.

5 Attach the clock movement to the back of the clock face backboard. Fasten the hands to the movement shaft. Install the clock face/movement assembly in the clock case. Hang the pendulum.

6 Add the glass to the door. Next, working from the back side of the clock, install the clock battery and set the time. (See the instructions supplied with the movement.) Screw the back panel (J) in place. Attach the dust cover (K).





Drill the pin holes through the door frame and into the top edge of the grille.

Buying Guide

● **Tall clock kit.** Quartz movement, 40" pendulum 16¾"-square paper face. Kit no. 71190, $50.40 ppd. Klockit, N3209 Country Road H North, Lake Geneva WI 53147. Call 800/556-2548 to order.

Produced by Marlen Kemmet. Project Design: James R. Downing. Photographs: Perry Struse, John Hetherington. Illustrations: Kim Downing

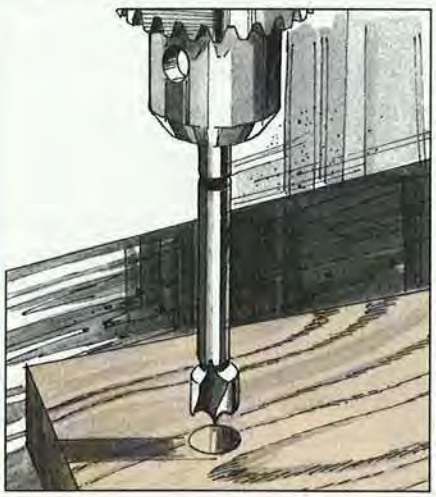
Print this article

CLEAN-AS-CAN-BE SCREW PLUGS

Like any well-camouflaged object, a wooden plug should closely match the color and grain of the wood surrounding it, with a nearly invisible rim. Sound challenging? It's not really, if you follow these simple steps.

1 Good-looking plugged surfaces start with perfectly round holes with clean, chip-free rims. For best results, we suggest using a sharp Forstner bit mounted in a drill press.

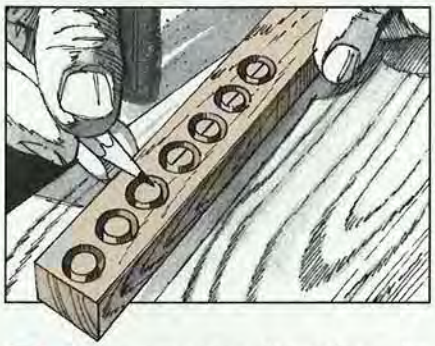
If you must use a hand-held drill, hold the tool steady and perpendicular to the work surface. If the drill wavers side to side, you'll wind up with a hole that's more of an oval than a circle.



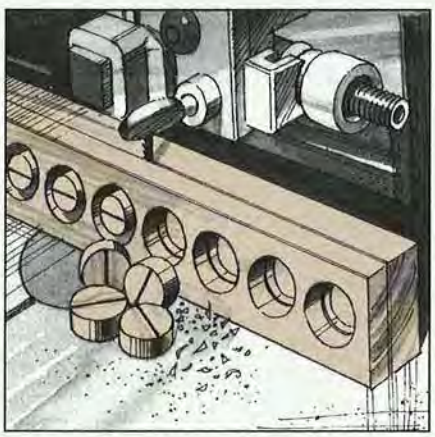
2 To cut the plugs, we strongly recommend you use Snug Plug Cutters (see the Buying Guide *at the end of this story*). These cutters produce plugs with slightly tapered walls, so the plugs fit like a cork in a bottle.

After cutting the plugs, mark a line across them parallel to the grain as shown *below*. This line helps you orient the plug with the grain of the workpiece later.

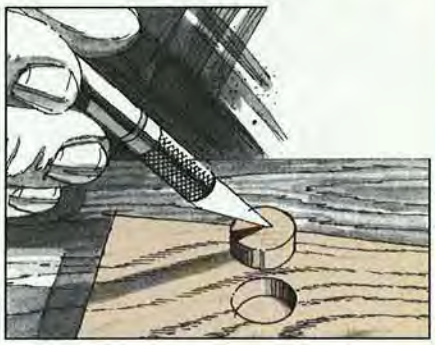
Tip: *When cutting parts for your project, save some scraps from the parts that will receive plugs later. Mark these with the name of the part so that you can cut well-matched plugs from them.*



3 Now, remove the plugs by sawing through the stock with a bandsaw. Note that we marked a sawing guideline along the side of our plug stock.



4 Sort through the plugs and find ones that most closely match the color and grain surrounding each hole. Lightly coat the walls of the plugs and holes with glue, and then carefully position each plug with an X-acto knife as shown *below*. Tap the plug into the hole.



5 After the glue dries, cut a hole slightly bigger than your plugs in the center of a piece of sandpaper. Place the sandpaper abrasive-side-down over the plug. The sandpaper stays in position and protects your workpiece as you saw the excess from the plug.

To saw off the plugs, we advise using a saw with fine teeth—one that has little or no set, such as the Japanese-style saw *below*. Remove the protective paper, and sand the plug flush with the surface using 100-grit abrasive around a hardwood block.

Buying Guide

- **Snug-plug cutters,** sold separately or in a set of three for $29.95 plus shipping from Garrett Wade. Call 800/221-2942.

Written by Bill Krier with Jim Downing Illustrations: Jim Stevenson

A *WOOD*® magazine cutting-edge report

10" CARBIDE-TIPPED

Considering the high price of today's hardwood lumber and plywood, we think it makes good sense to treat these precious commodities with a saw blade capable of clean, accurate cuts. Although today's best carbide-tipped blades start at about $40, they will more than pay for themselves in saved lumber and time. And, as we discovered in our tests, you may only need to buy one or two blades to meet all of your sawing needs.

Print this article

***Note:** In this article, we focus on 10" blades—the most common size for workshop saws. All of the manufacturers included in this review make blades identical to our tested versions in smaller and larger sizes with varying numbers of teeth. We also concentrated on blades intended for cutting solid woods and plywoods (and not those used on nonferrous metals and plastic-laminated particleboard). For this reason, we conducted our tests cutting into ¾"-thick solid oak, ¾" oak-veneer plywood, and 1½"-thick birch.*

Because of the technical jargon used to describe saw blades, shopping for the right model can be a confusing process. Actually, you just need to know the basics covered in this article to make an informed buying decision.

Biting points to consider: number of teeth on a blade

The 10" blades in our test had as few as 20, and as many as 80, total teeth. Manufacturers refer to blades with 30-or-less teeth as *ripping* blades, models with 40 or 50 teeth as *general-purpose* blades, and those with 60 or 80 teeth as *crosscutting* blades. (Some manufacturers further classify the 80-tooth models as *finishing* blades.)

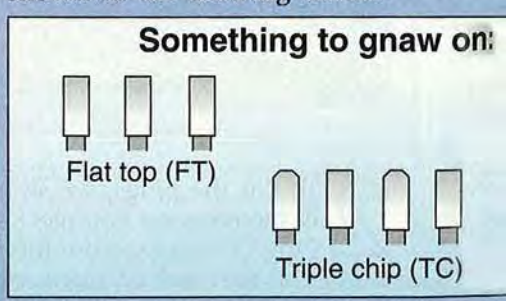
Generally, ripping blades cut faster with less heat buildup than blades with more teeth. But, they also make rougher cuts. In our tests we found these blades only marginally useful. With a properly aligned, fairly powerful (3-hp) tablesaw, we achieved our best ripping cuts in ¾" oak and 1½"-thick birch with general-purpose blades. We recommend you use ripping blades only if your saw tends to bog down when ripping dense or thick stock with general-purpose blades.

At the other end of the spectrum, crosscutting blades require slower feed rates but yield smoother cuts. Crosscutting blades will also work for most ripping tasks, but you must be careful not to burn stock that's ¾" thick or thicker.

As their name implies, general-purpose blades handle a variety of sawing tasks. Although we expected that these blades would offer a compromise in terms of cutting accuracy and smoothness, we found that several general-purpose blades handle ripping and crosscutting tasks as well or even better than blades especially made for these jobs.

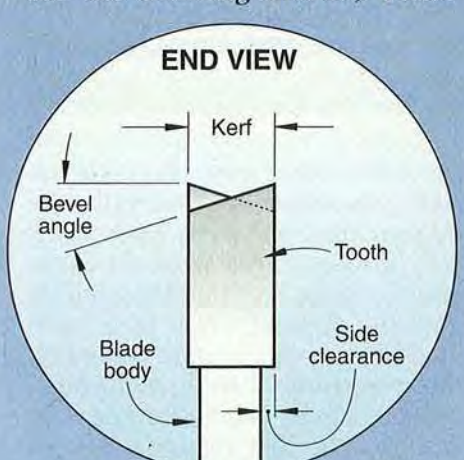
Saw-blade tooth grind: what you need to know

After brazing carbide teeth (tips) onto a steel-plate body, manufacturers grind the tops of the carbide teeth to various shapes and angles. The blades tested for this article have four types of grind, as shown in the drawing *below*.



SAW BLADES

With the most common type of grind, called *alternate top bevel (ATB)*, manufacturers machine the tops of the teeth at angles from 10° to 40°, with the teeth angled in alternating directions. (Manufacturers refer to the angle of the top of the teeth as *bevel.* To understand this term and others, see the drawing *below.*) These



ATB blades produced some of the best cuts in our test, and we found that, generally speaking, the higher the bevel, the cleaner the cut. That's because these teeth, when sharp, cleanly sheer wood fibers, rather than chopping and tearing them off.

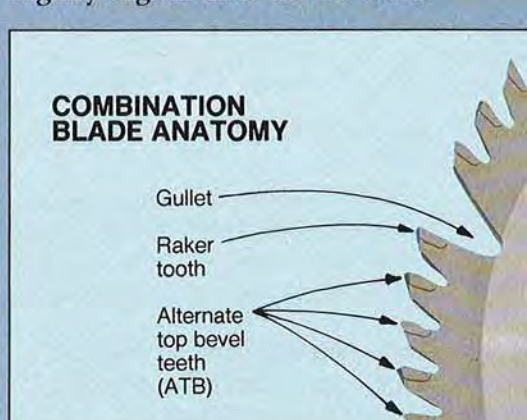
So why don't manufacturers make only blades with high bevel angles? Because the higher the bevel, the quicker the blade dulls. And, the sharp tips of highly beveled teeth chip easily if you mishandle the blade while changing it. So, if you want the cleanest possible cuts, and don't mind giving your blades a little extra maintenance, choose a model with a bevel angle of 20° or more.

Flat-top (FT) teeth have no bevel at all, so they don't cut as cleanly as ATB teeth, but they maintain their cutting edges better. And, FT teeth have less tendency to follow wood grain, so they produce straighter cuts in thick, hard woods with strong grain patterns such as oak that's more than 1½" thick. You'll find this grind on ripping blades only.

By mixing ATB and FT teeth, manufacturers come up with a so-called *combination* grind. Blades with this grind have 10 sets of five teeth. Each set of teeth has four ATB teeth preceded by a slightly lower FT tooth (referred to as a *raker*) and a large gullet as shown in the "Combination-blade anatomy" *right.*

In theory, this combination or *alternate top bevel/raker (ATB/R)* grind results in a blade that cuts as smoothly as crosscutting blades, and as quickly as ripping blades. We found little use for these blades since 40- and 60-tooth ATB blades outperformed them in all of the tasks in our tests. One manufacturer agreed with our assessment, but said that his company continues to supply these combination blades because of public demand for them.

Triple-chip (TC) blades have flat-top teeth where every other tooth has its corners ground off to a bevel. Typically, the beveled teeth are slightly higher than the FT teeth.



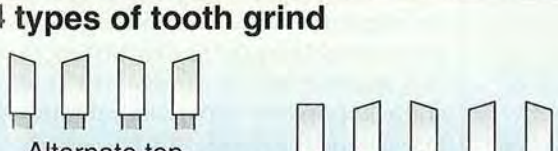
Hook angle of the teeth: the key to a blade's aggressiveness

Carbide teeth pitch either forward *(positive hook)*, backward *(negative hook)*, or in-line *(no hook)* with a line that runs through the blade center. (See the drawing of a positive-hooked tooth, *page 42.*) The blades in our test varied in hook from -6° to 22°.

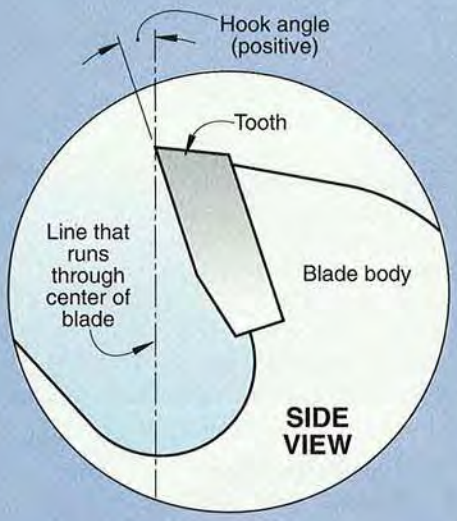
Manufacturers build negative hooks into blades especially intended for sliding mitersaws and radial-arm saws, because the

Continued

4 types of tooth grind



negative hook helps the blade push the stock down and against the machine's fence. Blades with positive hook cut more aggressively, making them more appropriate for saws with stationary blade carriages such as tablesaws.



In this top-view photo, the narrow teeth of a thin-kerf blade *(top)* distinguish it from a full-kerf blade *(bottom)*.

Kerf width: how it affects your saw's cutting power

Most of the saw blades in our test cut a kerf about .125" (or ⅛") wide. But, for comparison purposes we included a small sampling of thin-kerf blades with tooth widths less than .1". Because these thin-kerf blades plow through less stock to make a cut, they require less horsepower from your saw. So, you may consider purchasing one if you make cuts in hard stock thicker than ¾" and have a saw with a motor of 1½-hp or less, or if you routinely make cuts in expensive exotic woods and want to keep waste to a minimum. (For additional information on these thin-kerf blades, see the article "Thin-Kerf Showdown" on *pages 44–45* in the April 1990 issue of *WOOD* magazine.)

If you do opt for a thin-kerf blade, and want cuts as smooth as those produced by a full-kerf model, we suggest you stabilize the blade. This requires adding a flat plate (or plates depending on the producer) onto the saw's arbor next to the blade. Various manufacturers refer to these plates as stiffeners, stabilizers, or dampeners. Forrest sells single-plate stiffeners (4–7" in diameter), Freud markets two-plate stabilizers (3½" diameter), and CMT sells two-plate dampeners (5" diameter). All three systems work well. But remember, these stabilizers will limit your depth of cut.

***Note:** Most saw-blade packages list the tooth number and type of grind, but few packages mention kerf width, or hook and bevel angles. In the chart at the end of this article you'll find all of this information for the blades tested here.*

What you need to know about saw-blade bodies

As you'll see in the chart on *pages 44 and 45*, manufacturers cut saw-blade bodies from large sheets of steel in one of two ways: *stamping* or *laser cutting*. Generally, the highest-quality blades have laser-cut bodies. This process takes longer and costs more than stamping, but it produces a plate with less built-in stress. And, laser-cutting machines can slice through harder steels than stamping machines. For this reason, laser-cut saw bodies are stiffer and less prone to distorting under stress. Laser-cut bodies also have smaller, quieter expansion slots.

Resharpening: all

No matter how good a blade you buy, it will continue to perform well only if you have it *properly* resharpened by a knowledgeable person with high-quality sharpening equipment. How do you find such a person? Most manufacturers do not provide resharpening service, but several of them passed along these suggestions:

- **Find out if the individual or saw shop has a good reputation.** If the operator does a large volume of repeat business with professional woodworkers, then he probably provides good service.

More points to consider

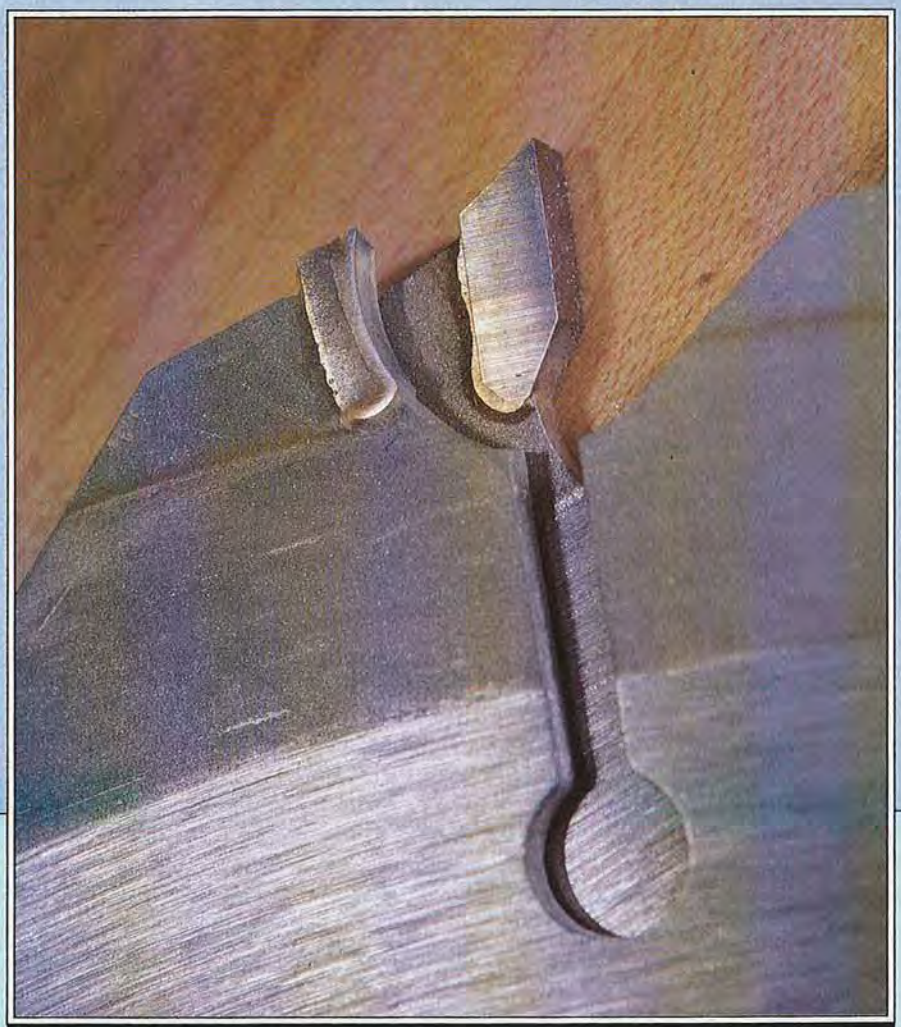
• **Noise levels.** In the chart on *page 45*, we list the noise levels of all the blades. Two tested blades—identical-looking 60-tooth ATB models from DML and Sears Excalibur—developed a high-pitched noise as high as 110 decibels after running under no load for several seconds. (Although the blades appear identical except for labeling, Fred Garms of DML told us that Vermont-American, the parent company of DML, manufactures the Excalibur blades in a different plant than the DML blades.)

In response to the high-pitched-noise problem, Garms replied that the blade we tested was not properly tensioned for our 4,000 rpm tablesaw. He said that DML will retension any blade free of charge for a consumer that experiences the same noise problem.

• **If possible, inspect a blade before you purchase it.** As we opened the packages of our test blades, we found chipped teeth on several of them. Even the most expensive blades were not immune from this defect. Our advice: carefully inspect any new blade. Choose another blade or return it if you find chipped teeth.

• **Blade packaging.** Some blades in our test come in throwaway containers, and a few of them come in cardboard boxes suitable for shipping to a resharpener. Of all of the brands, we liked the CMT, Delta, and Sears Excalibur packages the best because they double as wall-hung, plastic blade carriers. (See photo on the *next page.*)

Continued



Black & Decker Piranha blades *(foreground)* have teeth with curved faces. Other blades have flat-faced teeth like those on the DML blade *(background).*

important

• **Take a look at the resharpening equipment.** The best carbide-grinding equipment has completely automated, computerized controls. For optimum results, the tips should be ground to at least 400 grit with abrasive wheels (better yet if ground to 600 grit). The machine should grind both the face and the tops of the teeth in separate steps.

• **Call or write the manufacturer.** Although most manufacturers do not recommend specific sharpening services in their packaging, you may get a referral if you contact the manufacturer. Of the companies represented in this article, only Forrest advertises that it will resharpen its blades to original specifications if you mail the blade back to the factory. (Forrest also sharpens competing blades.)

Among the tested blades, only the Black & Decker Ultra Piranha blade has teeth with curved faces as shown in the photo *above.* We've spoken with resharpening professionals who say they can sharpen the teeth on these blades by grinding down their tops, but the cutting geometry of the teeth changes slightly after resharpening. By lowering the top of the teeth with grinding, the hook angle of the curved face decreases.

CARBIDE-TIPPED SAW BLADES

Delta Industrial blades come in reusable plastic cases for easy storage, display, or transport. CMT and Sears Excalibur blades have similar packaging.

• A misaligned saw will nullify the benefits of high-quality blades. No matter how perfect a blade may be, if your saw's not adjusted properly, the blade will not perform up to its potential. So, carefully adjust your saw according to the machine's manual.

Recommendations

As you can see in the chart *right*, all of the blades tested for this article performed well. Choosing clear favorites presented us with quite a challenge, but here it goes.

Given the impressive showing of most of the 40- and 60-tooth, general-purpose blades with ATB grinds, we think it makes good sense to put one of these versatile blades in your tablesaw and leave it there for most tasks in plywoods and solid woods under 1½" thick.

If price doesn't matter to you, no general-purpose blade produced better results than the Forrest 40-tooth Woodworker II. But, for less than half the money, you can buy several blades that perform nearly as well, including the Amana 610600, Freud LU72, Freud LU88, and Oldham/U.S. Saw Wizard Elite 1007740T. The Wizard Elite represents a good value because it comes with a coupon for a free resharpening (at press time). You need to send the blade to either Burt, N.Y. or Chicago, at the company's discretion.

For velvety-smooth, chip-free crosscuts and miters, the Freud LU85 has no equal among blades costing less than $100. It was also the quietest blade we tested.

If you use your tablesaw primarily for ripping, take a look at the 30-tooth Systi Matic 10GR30. Unlike most ripping blades with FT grinds, the 10GR30 has a TC grind and produced good or excellent rip cuts in all tested solid woods and plywoods.

And, if you're looking for blades with an iron-clad warranty, check out the Delta Industrial models. You can return these blades to your Delta dealer at any time, for any reason, no questions asked.

Written by Bill Krier
Technical consultant: Bob McFarlin
Photographs: Hopkins Associates
Illustrations: Kim Downing

MANUFACTURER	MODEL	NUMBER OF TEETH	KERF (INCHES)	
AMANA	RB1020	20	.125	
	610504	50	.134	
	610600	60	.125	
	610800	80	.124	
BLACK & DECKER PIRANHA ULTRA	73-940	32	.088	
	73-970	60	.090	
CMT	110-240	24	.110	
	110-500	50	.100	
	110-600	60	.094	
	110-800	80	.121	
DML	G1024R	24	.128	
	G1050PL	50	.131	
	G1060	60	.126	
	DT1000	80	.093	
DELTA INDUSTRIAL	35-612	24	.125	
	35-617	50	.126	
	35-619	60	.116	
	35-623	80	.126	
FORREST	WOODWORKER II	30	.125	
		40	.126	
	DURALINE HI A/T	80	.122	
	CHOPMASTER	80	.108	
FREUD	LM 72	24	.126	
	LU 72	40	.126	
	LU 84	50	.126	
	LU 88	60	.090	
	LU 85	80	.116	
OLDHAM/US SAW WIZARD ELITE	1007740T	40	.121	
	1002280T	80	.122	
SEARS EXCALIBUR	32031	24	.132	
	32035	50	.128	
	32033	60	.133	
SYSTI MATIC	10GR30	30	.144	
	BB50	50	.127	
	PT60	60	.131	
	PT80	80	.129	

NOTES:

1. (ATB) Alternate top bevel
   (ATB/R) Alternate top bevel with rakers
   (FT) Flat top
   (TC) Triple chip
2. Hook angles are positive except for those with minus (-) symbol which are negative.
3. Bevel angles for ATB/R blades are for the beveled teeth. Raker teeth have flat (0°) tops.
4. (NR) Blade not recommended or intended for this operation.

E Excellent G Good F Fair

LET'S CUT TO THE CORE: EVALUATIONS OF 36 PREMIUM SAW BLADES

				QUALITY OF TABLESAW CUTS (4)										QUALITY OF MITERSAW CUTS IN 3/4" SOLID OAK (4)					
				SOLID STOCK (3/4" OAK)					PLYWOOD (3/4" OAK VENEER)			1 1/2" SOLID BIRCH							
				RIPPING		CROSSCUTTING			CROSSCUTTING			RIPPING							
TOOTH GRIND (1)	TOOTH HOOK ANGLE (DEGREES) (2)	TOP OF TOOTH BEVEL ANGLE (DEGREES) (3)	PLATE (L) LASER-CUT (S) STAMPED	JOINT QUALITY OF EDGE (5)	SMOOTHNESS OF EDGE (6)	CHIPPING ON TOP OF CUT (7)	CHIPPING ON BOTTOM OF CUT (7)	SMOOTHNESS OF EDGE (6)	JOINT QUALITY OF RIPPED EDGE (5)	CHIPPING ON TOP OF CUT (7)	CHIPPING ON BOTTOM OF CUT (7)	JOINT QUALITY OF EDGE (5)	SMOOTHNESS OF EDGE (6)	CHIPPING ON TOP OF CUT (7)	CHIPPING ON BOTTOM OF CUT (7)	NOISE LEVEL (8)	COUNTRY OF ORIGIN (9)	LIST PRICE	SELLING PRICE
FT	18	0	S	NR	NR	NR	NR	NR	NR	NR	NR	F	F	NR	NR	90	IS	$ 71	$ 50
ATB/R	10	12	L	G	G	G	G	F	E	F	F	G	G	G	F	86	IS	77	50
ATB	10	10	L	G	G	E	G	F	E	G	G	NR	NR	G	F	84	IS	81	45
ATB	10	10	L	NR	NR	E	E	G	E	E	G	NR	NR	E	G	78	IS	109	80
ATB	20	10	S	G	G	NR	NR	NR	G	NR	NR	G	G	NR	NR	78	U	57	35
ATB	20	10	S	G	G	E	F	F	G	G	F	NR	NR	G	F	80	U	116	70
FT	20	0	L	NR	NR	NR	NR	NR	G	NR	NR	G	G	NR	NR	88	C	60	49
ATB/R	12	15	L	G	G	G	G	F	G	F	G	G	G	G	F	90	C	69	52
ATB	-5	30	L	E	G	G	F	G	E	F	G	NR	NR	G	F	82	C	74	54
ATB	-5	30	L	NR	NR	F	E	E	E	F	E	NR	NR	NR	NR	80	C	79	59
FT	20	0	S	G	G	NR	NR	NR	NR	NR	NR	F	G	NR	NR	86	U	75	82
ATB/R	10	20	S	G	G	G	G	F	G	F	F	G	G	G	F	92.5	U	97	62
ATB	10	20	S	G	G	E	E	F	E	G	G	NR	NR	G	F	88*	U	109	70
ATB	10	20	S	NR	NR	G	G	G	G	G	F	NR	NR	G	F	88	U	117	78
ATB	20	15	L	NR	NR	NR	NR	NR	NR	NR	NR	G	G	NR	NR	86	G	43	40
ATB/R	15	15	L	G	G	G	G	F	E	F	F	G	G	F	F	86	G	53	40
TC	-6	0	L	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	E	G	86	G	62	45
ATB	8	15	L	NR	NR	E	E	G	E	E	G	NR	NR	E	G	78	G	76	60
ATB	20	15	L	E	E	NR	NR	NR	E	NR	NR	E	E	NR	NR	88	U	135	89
ATB	20	15	L	E	E	E	E	E	E	E	E	E	E	G	E	90.5	U	156	109
ATB	5	40	L	NR	NR	E	E	E	E	E	E	NR	NR	E	E	75.5	U	207	165
ATB/R	-5	30	L	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	E	E	88	U	207	119
FT	20	0	L	NR	NR	NR	NR	NR	NR	NR	NR	E	G	NR	NR	86	IT	66	40
ATB	13	10	L	E	G	E	E	F	E	G	G	E	E	G	G	88	IT	67	40
ATB/R	10	10	L	E	G	G	G	F	E	F	G	E	G	G	F	88	IT	76	45
ATB	15	15	L	E	G	E	E	G	E	E	E	NR	NR	E	E	78	IT	86	45
ATB	10	20	L	NR	NR	E	E	E	E	E	E	NR	NR	E	E	74	IT	112	60
ATB	12	15	S	G	E	E	E	G	E	E	F	F	G	F	F	90	U	60	40
ATB	12	15	S	NR	NR	E	E	G	E	E	G	NR	NR	E	G	78	U	100	80
FT	20	0	S	NR	NR	NR	NR	NR	NR	NR	NR	F	G	NR	NR	86	U	–	50
ATB/R	10	20	S	G	G	G	G	F	G	F	F	G	G	G	F	92.5	U	–	60
ATB	10	20	S	G	G	E	E	F	E	G	G	NR	NR	G	F	88*	U	–	60
TC	22	0	L	E	G	NR	NR	NR	G	NR	NR	E	E	NR	NR	90	U	77	55
ATB/R	15	20	L	E	G	G	G	F	G	F	F	G	G	G	E	86	U	83	50
ATB	10	20	L	G	G	E	E	F	E	G	G	NR	NR	G	G	83.5	U	94	60
ATB	10	20	L	NR	NR	E	E	E	E	E	G	NR	NR	E	G	78	U	122	85

5. Amount of visible line at joint of two edge-joined boards.
   - E Barely noticeable lines on top and bottom of joint.
   - G Barely noticeable line on top of joint; minor line visible on bottom of joint.
   - F Minor lines visible on top and bottom of joint.
6. Degree of scratching (blade marks) on edge of stock.
   - E No visible scratches.
   - G Fine scratches that remove with hand sanding.
   - F Medium scratches that require a finishing sander or jointer for removal.
7. Chipping
   - E Minor chipping; edge is suitable for edge-joining or edge-banding.
   - G Moderate chipping; edge is suitable for most applications.
   - F Chipped edge which requires repair.

   Note: Results in plywood vary greatly according to quality of plywood being used. Test results based on high-quality, plain-sliced, oak-veneer plywood.
8. Measured in decibels from a distance of 3', with blade turning at 4,000 rpm, without cutting load.
   * Blades developed a high-pitched noise reaching up to 110 decibels after running without load for several seconds.
9. (C) Canada
   (G) Germany
   (IS) Israel
   (IT) Italy
   (U) United States

FOR BIRDS ON THE MOVE

SEEDS & SUCH

When Pat Schlarbaum, songbird specialist with Iowa's Department of Natural Resources, stopped by *WOOD*® magazine with this feeder, we saw some new concepts that needed explaining. We have run bird feeders before, but none quite like this. It didn't take long, however, for Pat to quickly put our concerns to rest with his thorough knowledge of birds and their feeding habits. Now, we believe this may be our best-ever feeder. See the information at *right* for Pat's sensible approach to this outdoor project.

Print this article

All feeders are not created (or constructed) equal

This bird feeder design appeals to a variety of birds and their feeding habits. In designing it, I wanted to provide a healthy, durable structure that both people and birds could enjoy for a lifetime.

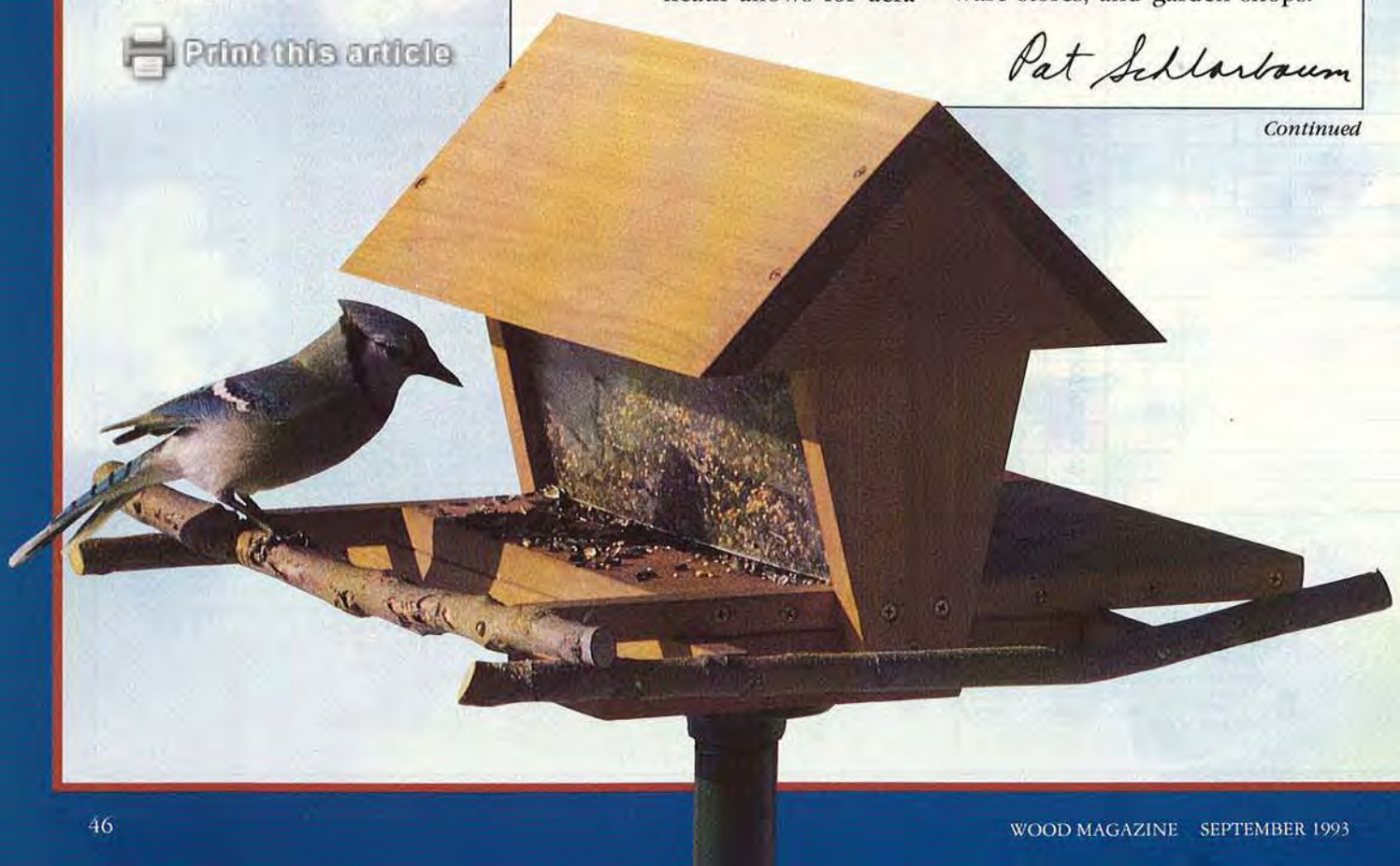
When songbirds feed from a seed supply that's damp and sometimes infested with Aspergillosis (a fungal disease), it can kill them. For this reason, I've designed a feeder that specifically keeps seed dry and minimizes the threat of this disease.

The proportions of the feeder include an overhang that aids in keeping the feeding area dry. The recessed trough controls seed waste. An attached screen underneath allows for aeration. I designed this cedar feeder to be large enough to let birds of different species, particularly territorial ones like the nuthatch, feed at the same time without bothering one another.

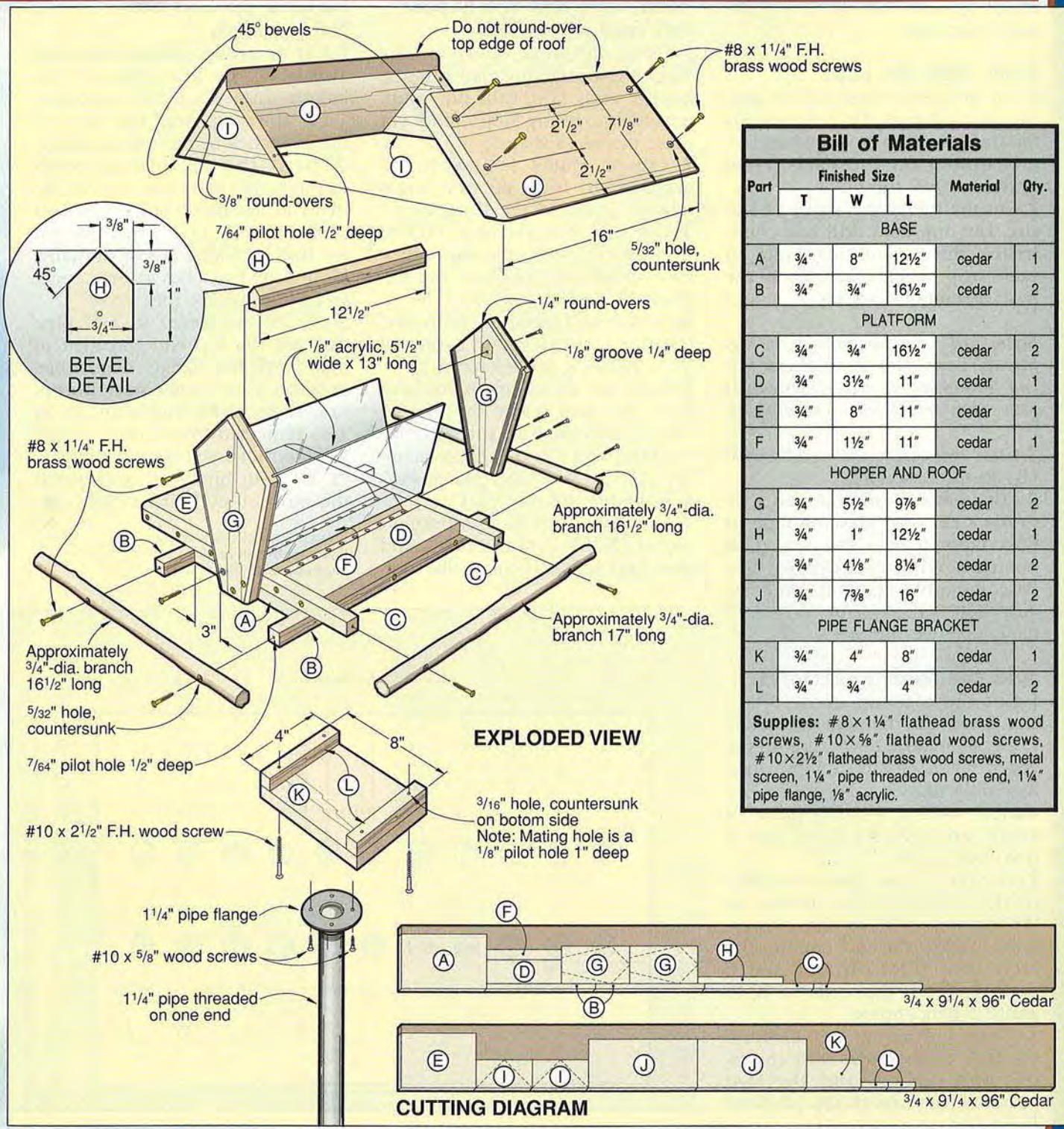
To hold seed between their toes while eating, songbirds such as chickadees and tufted titmice require perches or a branch. However, birds that typically feed on the ground, like cardinals and juncoes, use a crevice in tree bark to hold their seed while they peck it open. To accommodate both types of birds, I use tree branches for perches on my feeders. I've found that oil (black) sunflower seeds are preferred by the most desirable species. They're widely available at home centers, hardware stores, and garden shops.

Pat Schlarbaum

Continued



SNACK SHOP



Bill of Materials

Part	Finished Size T	W	L	Material	Qty.
BASE					
A	¾"	8"	12½"	cedar	1
B	¾"	¾"	16½"	cedar	2
PLATFORM					
C	¾"	¾"	16½"	cedar	2
D	¾"	3½"	11"	cedar	1
E	¾"	8"	11"	cedar	1
F	¾"	1½"	11"	cedar	1
HOPPER AND ROOF					
G	¾"	5½"	9⅞"	cedar	2
H	¾"	1"	12½"	cedar	1
I	¾"	4⅛"	8¼"	cedar	2
J	¾"	7⅜"	16"	cedar	2
PIPE FLANGE BRACKET					
K	¾"	4"	8"	cedar	1
L	¾"	¾"	4"	cedar	2

Supplies: #8×1¼" flathead brass wood screws, #10×⅝" flathead wood screws, #10×2½" flathead brass wood screws, metal screen, 1¼" pipe threaded on one end, 1¼" pipe flange, ⅛" acrylic.

SEEDS & SUCH SNACK SHOP

Note: For the construction of this feeder, we purchased 1×10" cedar boards at a local home center. Then, we selected areas between the splits and knots for the pieces. Our stock came ⅞" thick and planed on one side. We planed the rough opposite side for a ¾" finished thickness.

Start with the base

1 Cut the feeder base (A) to size. Lay out and mark the centerpoints for the ½" drain holes where dimensioned on the Parts View drawing. Drill the holes.
2 Cut the two perch strips (B) to size. Lay out, then drill and countersink three mounting holes in each strip where located on the Base Assembly drawing.

Note: So it can stand up to the elements, construct your feeder using Titebond II water-resistant glue, slow-set epoxy, or resorcinol.

3 Glue and screw the perch strips (B) to the base (A).
4 Cut a piece of metal screen wire to 4¼×12". Use masking tape or duct tape to hold the screen in position where shown on the Base Assembly drawing. Then, secure the screen with #18×½" nails. Remove the tape.

Add the feeding platform

1 Cut the platform ends (C) to size. Then, cut the platform pieces (D, E, F) to size, bevel-ripping the edges where shown on the Base Assembly drawing. For safety, we started with a 5"-wide piece of stock, and bevel-ripped part F from one edge.
2 Dry-clamp the pieces together in the configuration shown on the drawing. Mark the centerpoints, and drill and countersink mounting holes through the C parts and into the ends of D, E, and F where shown.
3 Glue and screw the platform (C, D, E, F) together. Mark the radii, and cut or sand the two rounded corners of the platform to shape where shown on the Base Assembly drawing.
4 Drill mounting holes, and then glue and screw the platform to the base where shown on the Exploded View and Base drawings.

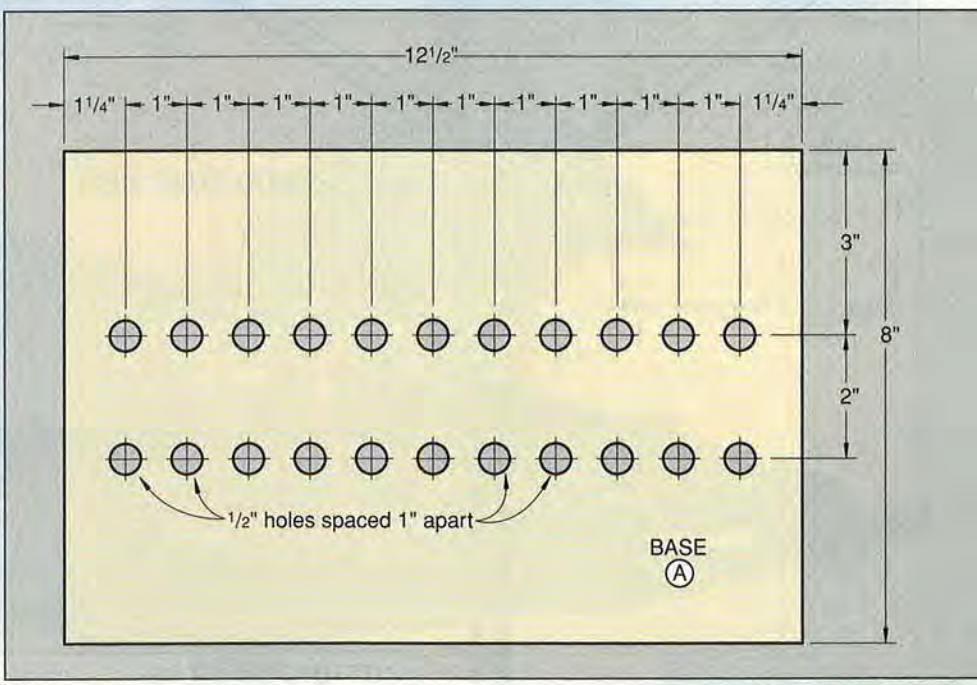
Next, let's add the hopper and roof assemblies

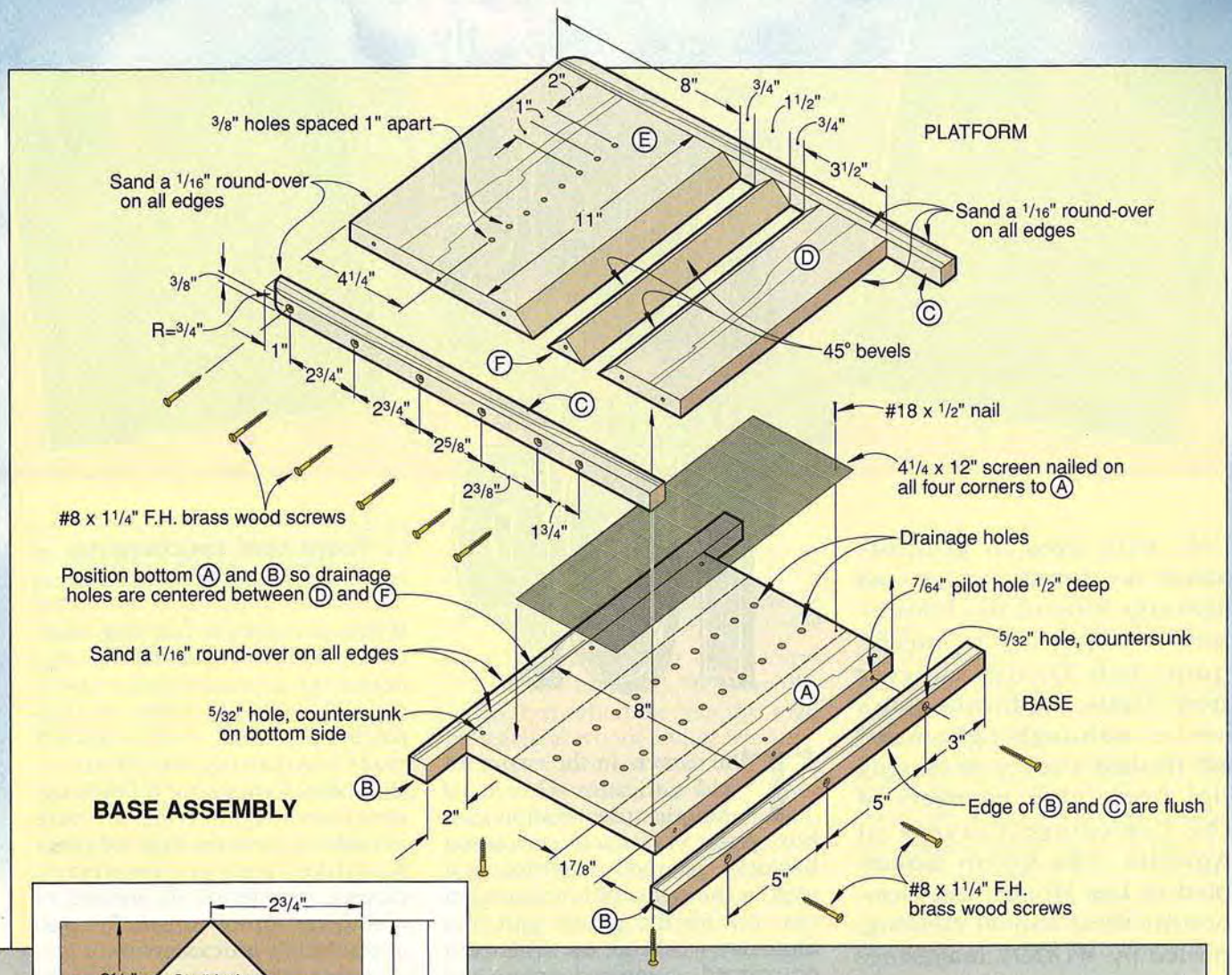
1 Using the dimensions on the Parts View drawing, lay out the hopper ends (G), drill the countersunk mounting holes, and cut these pieces to shape.
2 Cut or rout a ⅛" groove ¼" deep ⅜" in from the the edges where shown on the Parts View.
3 Cut the cross member (H) to size, bevel-ripping the top edges. (See the Bevel Detail on the Exploded View drawing.)
4 Cut the roof pieces (I, J) to size. (See the Parts View and Exploded View drawing for reference.)
5 Drill the mounting holes, and then glue and screw the hopper ends (G) to the base and platform assembly. Secure the cross member (H) between the end pieces.
6 Assemble the roof (I, J).
7 Cut the pipe flange bracket pieces (K, L). Drill the holes, and glue and screw them to the bottom of the base, being careful not to cover the drainage holes.
8 Have two pieces of ⅛" clear acrylic cut to fit the hopper grooves. Secure a pipe flange to the bottom of bracket (K, L).

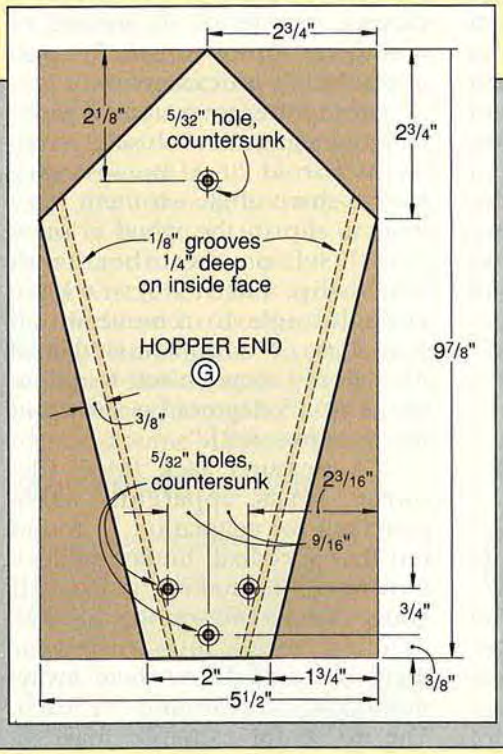
Natural perches are for the birds

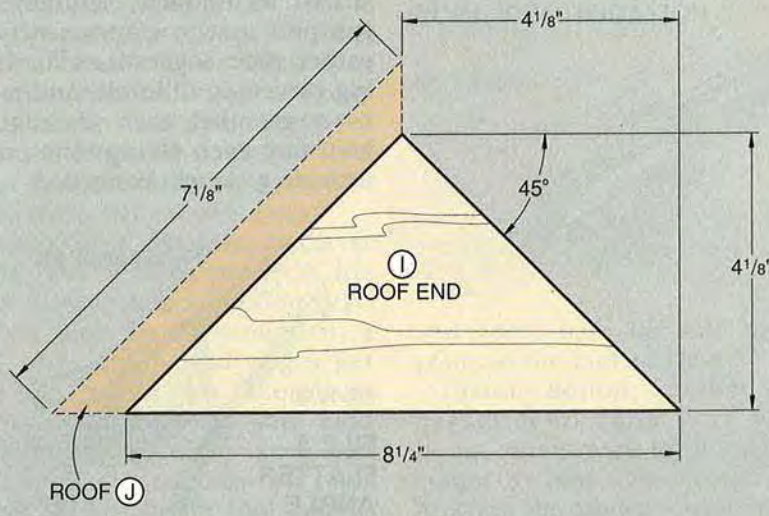
1 Cut or prune straight branches about ¾" in diameter to the lengths shown on the Exploded View drawing. Seal the ends of the branches to prevent cracking.
2 Drill the mounting holes through the branches and secure them to the perch strips (B) and platform ends (C) where shown on the Exploded View drawing. Mount the branches so they come in contact where they cross.
3 Mount the feeder to 1¼" pipe that has the top end threaded to mate with the flange. If possible, position your feeder near bushes or evergreens for shelter and in an area protected from strong winds. Lift the roof assembly off the feeder, fill with bird feed, and watch the birds come home to feed.

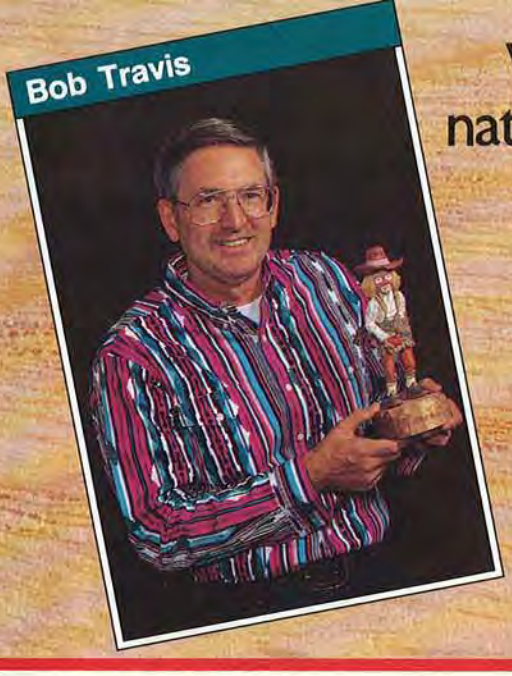
Project Design: Pat Schlarbaum
Photographs: Bill Hopkins
Illustrations: Kim Downing




PLATFORM
3/8" holes spaced 1" apart
Sand a 1/16" round-over on all edges
Sand a 1/16" round-over on all edges
45° bevels
#18 x 1/2" nail
4 1/4 x 12" screen nailed on all four corners to A
#8 x 1 1/4" F.H. brass wood screws
Drainage holes
7/64" pilot hole 1/2" deep
Position bottom A and B so drainage holes are centered between D and F
Sand a 1/16" round-over on all edges
5/32" hole, countersunk
5/32" hole, countersunk on bottom side
BASE
Edge of B and C are flush
#8 x 1 1/4" F.H. brass wood screws
BASE ASSEMBLY

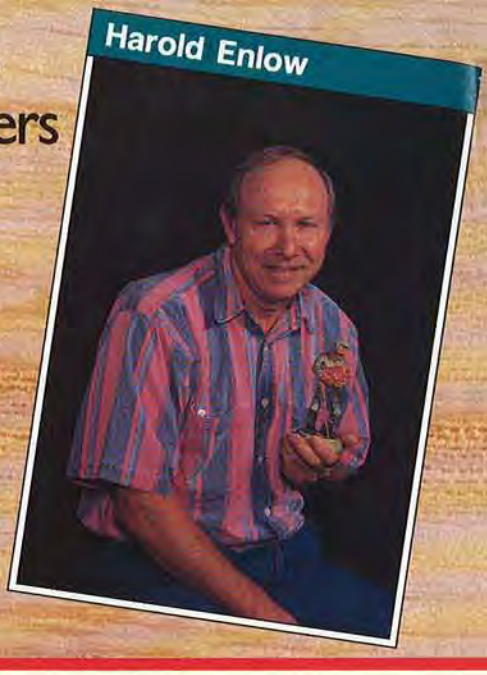

5/32" hole, countersunk
1/8" grooves 1/4" deep on inside face
HOPPER END G
5/32" holes, countersunk
9/16"
3/4"
2"
1 3/4"
5 1/2"


45°
I ROOF END
ROOF J
8 1/4"



When some of the nation's foremost carvers convene, chips fly, but so do . . .

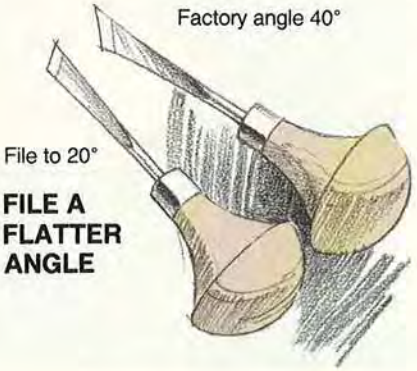
TIPS from the TOP



"My wife used to grumble about my leaving chips and shavings around the house—until I taught her to carve," quips Bob Travis, a carver from Davis, California. Bob's advice, although light-hearted, flushed a covey of carving tips from other members of the Caricature Carvers of America. The group assembled in Des Moines last October for their annual meeting, hosted by *WOOD*® magazine.

Print this article

The carvers in the two-year-old Caricature Carvers of America organization (see box, *page 53*) talked association business, planned activities, and took in the sights of Iowa's capital city. But for the greater part of a three-day weekend, the 13 attendees carved, compared notes, and shared techniques. Naturally, we jumped at the opportunity to gather their suggestions for helping carvers at all levels. And member to member, each was eager to help out, even taking time out to provide a sketch as needed.



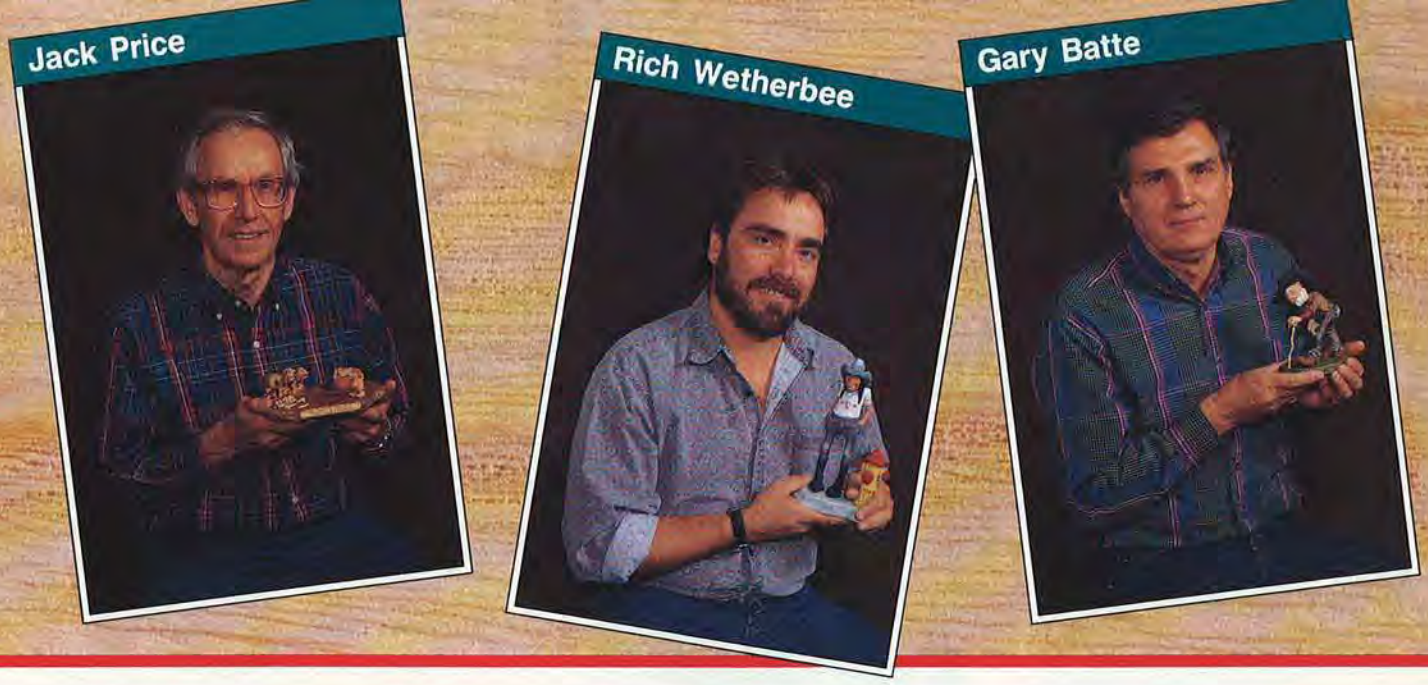
FILE A FLATTER ANGLE

From tool touchups to chip-tested alternatives

When it comes to carving tools, CCA members have nearly two centuries of combined experience. Take Harold Enlow of Dogpatch (yes, folks, there is such a place), Arkansas, for instance. He's been turning out hillbilly figures from his home in the Ozark mountains for more than 20 years. And like most accomplished carvers, he's prone to making or modifying a tool to suit his purposes. Here's an example:

"During the last couple of years, I started using skew chisels," comments Harold. "And because they have a sharp angle on them, they tend to slip in the wood a lot. A flat chisel, on the other hand, won't slip, but it doesn't have enough angle to remove much wood. So, I compromised and filed all my skew chisels to an angle of 20–25 degrees [as shown in the drawing, *left*]."

CCA treasurer Jack Price, Cleburne, Texas, apparently has a penchant for adaptation. "I found out that Speedball linoleum-block cutting tools make good, small gouges for woodcarving," he says. "They're disposable—just wear them out and throw them away; they only cost around $1 each. The no. 2, for example, makes a

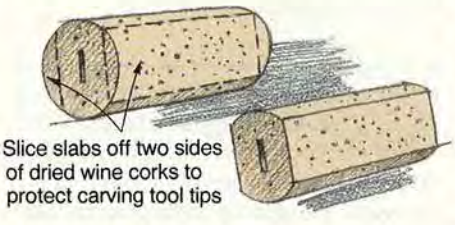


nice, tiny V-gouge [Speedball linoleum cutters, available at art supply stores, come in five configurations]. But first you have to sharpen them a little. A buffing wheel works best because they're made of thin steel. After that, they cut real well."

Rich Wetherbee, a carver from Colorado Springs, Colorado, has found a good substitute for the traditional sharpening stone to hone edges. "I've replaced my sharpening stones with emery cloth," he says. "It doesn't cost as much as stones, and it's handier." Dave uses a coarse-gritted strip for shaping a tool's cutting edge, and a fine-gritted strip to finish the edge. He adheres the strips to the sides of a flat stick with double-faced tape for easy use.

Carvers, like other woodworkers, believe in caring for their tools. Not so their investments will just last longer, but also to keep them sharp. And CCA members had some suggestions.

TOOL TIP PROTECTORS



Slice slabs off two sides of dried wine corks to protect carving tool tips

Careful carrying, convenient collection

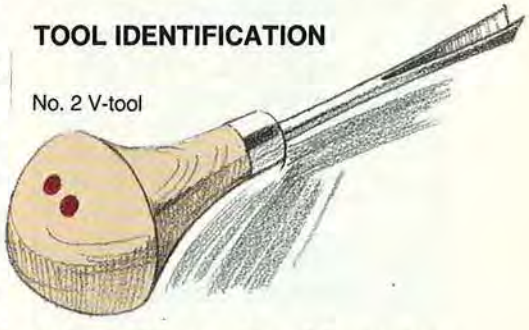
Gary Batte does most of his carving in his home at Stephenville, Texas, but when he hits the road to teach a woodcarving seminar, he makes sure his tools don't lose their edges along the way. "I put short lengths of clear-plastic, flexible tubing over my blades and gouges," he comments. "Just cut lengths ½" longer than the blade or gouge tip, and slip them on." Gary buys the ½" o.d., ⅜" i.d tubing at hardware stores for about 30 cents per running foot.

To protect the edges of his knives' blades, Dave Stetson of Phoenix, Arizona, looks to wine-bottle corks. "Let them dry out," he says. "Then, if you don't like them [the corks] round, you can carve them flat on two sides."

Texan Steve Prescott, a carver from Fort Worth, protects his tools' cutting edges another way. "When tools knock around in a tool box, uncovered edges get beat up. I found that little pieces of dense plastic foam—the kind used to make picnic coolers—can be shaped on a bandsaw for cases to cover the whole tool," Steve says. "All you have to do is press the tool into the plastic foam to form it to shape. Then, label the case with a marking pen. This works so well that I even cut plastic foam to fit inside my knife sheath so that the blade doesn't cut the leather."

WOOD magazine's carving consultant and founding CCA member, Harley Refsal, of Decorah, Iowa, teaches a lot, too, and has found that students often get their tools mixed up at carving classes. He suggests making tools easy to identify. "Take a can of bright spray paint and just dust the end of the handle on all your tools," he says. "It won't hurt the tools,

TOOL IDENTIFICATION



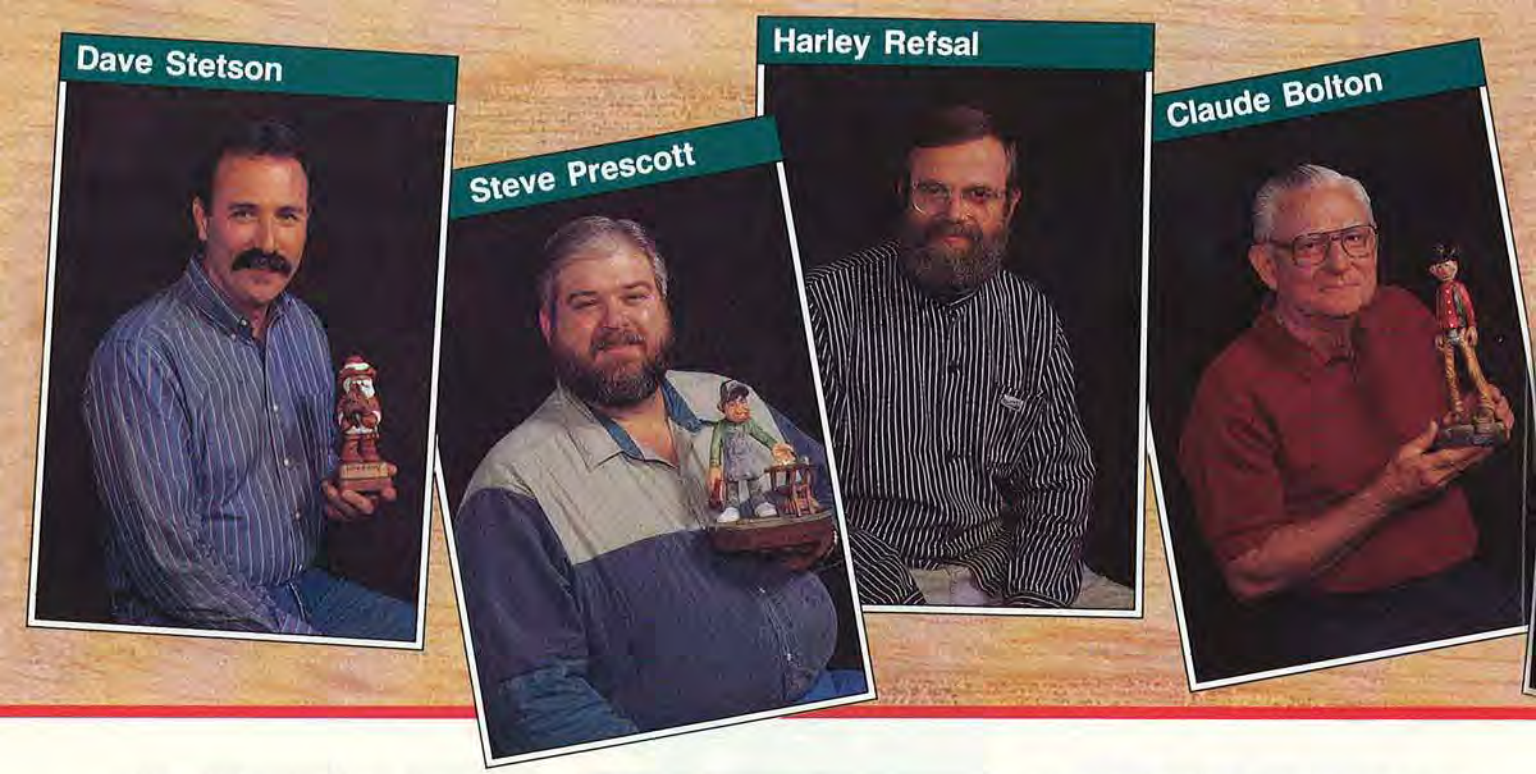
No. 2 V-tool

and you'll sure be able to spot yours at the end of class."

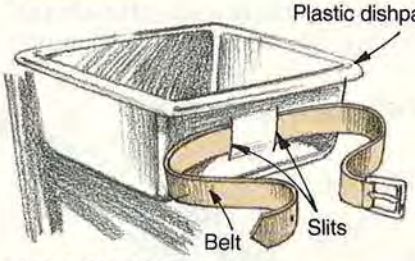
Claude Bolton, another Texas carver who calls Fort Worth home, agrees with Harley when it comes to tool identification. But he takes the advice a step further.

"When I carve, I wear single-focus prescription eyeglasses, ground so that I can see clearly to

Continued



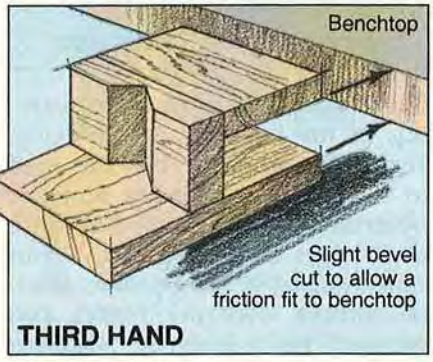
about 12" away. But that used to mean picking up a gouge and bringing it closer to see exactly what it was. Now, though, all my gouges are color and number coded," notes Claude. "That is, I choose a color for each type of gouge and then paint dots on the end of the handle to correspond to its size—kind of like the dots on dominoes [see drawing, *preceding page*]. I can pick them out from afar."



CHIP CATCHER

Employable aids, assorted assistance

Desiree Hajney has made a name for herself in the carving world with her realistic wildlife pieces. But an artist adept at cartooning as well, the Columbus, Nebraska, carver flavors her work with dashes of caricature and occasional sprinkles of humor. And at her carving seminars, she keeps open ears for snippets of wisdom.



THIRD HAND

For example, Desiree learned this nifty tip from a married couple that frequently attend her classes. "Bob and Irene Barel, from Reed Springs, Missouri, manage to carve as they travel," she says. "They do it by cutting two slits in a plastic dishpan and running a leather belt through them. That way, they can hang it around the waist as a portable chip receptacle [see illustration, *left*]. With it, one of them can carve while sitting in the car, and they empty the chips once they reach their destination. This also applies to lounging in your easy chair."

Marv Kaisersatt, of Faribault, Minnesota, has found "another hand" to assist him with carving. "It's a holder that I slip onto my workbench [see illustration, *left*]. I tapered the jaws so that it's a friction fit. When I'm doing a figure and need both hands, I just lay the carving in there."

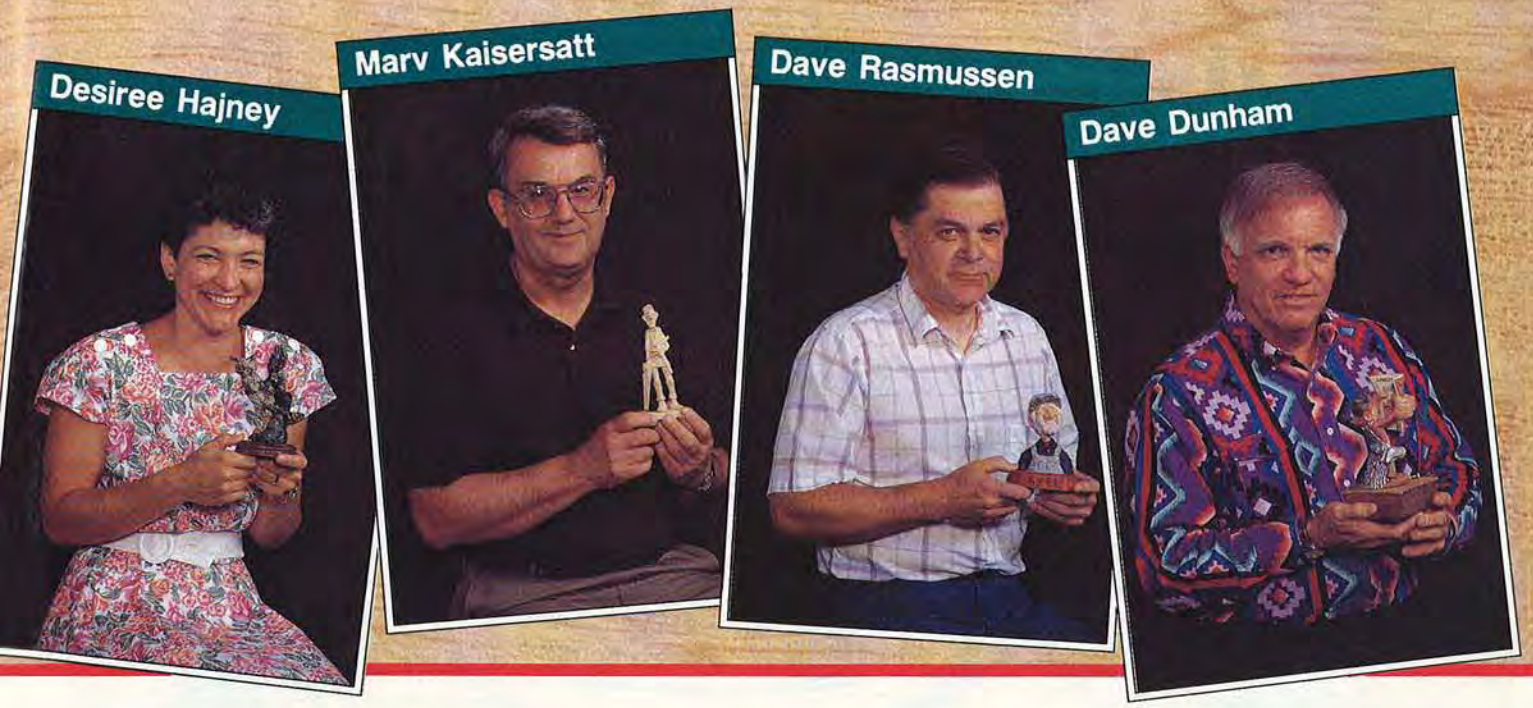
Jack Price, who offered the Speedball carving tool tip, offers a tidy means of finger protection. "I buy rubber finger pads at office supply stores. They can be cut and trimmed as needed to slip over your finger or thumb [as shown *left*] to keep from getting sore spots or callouses."

Dave Dunham, a Cleburne, Texas, orthodontist, says, "I patch up small minor finger cuts with Super Glue. First stop the bleeding, then apply the glue right on the cut. Then, don't remove it before the cut heals."

FINGER SAVERS

Chip away in a carving station

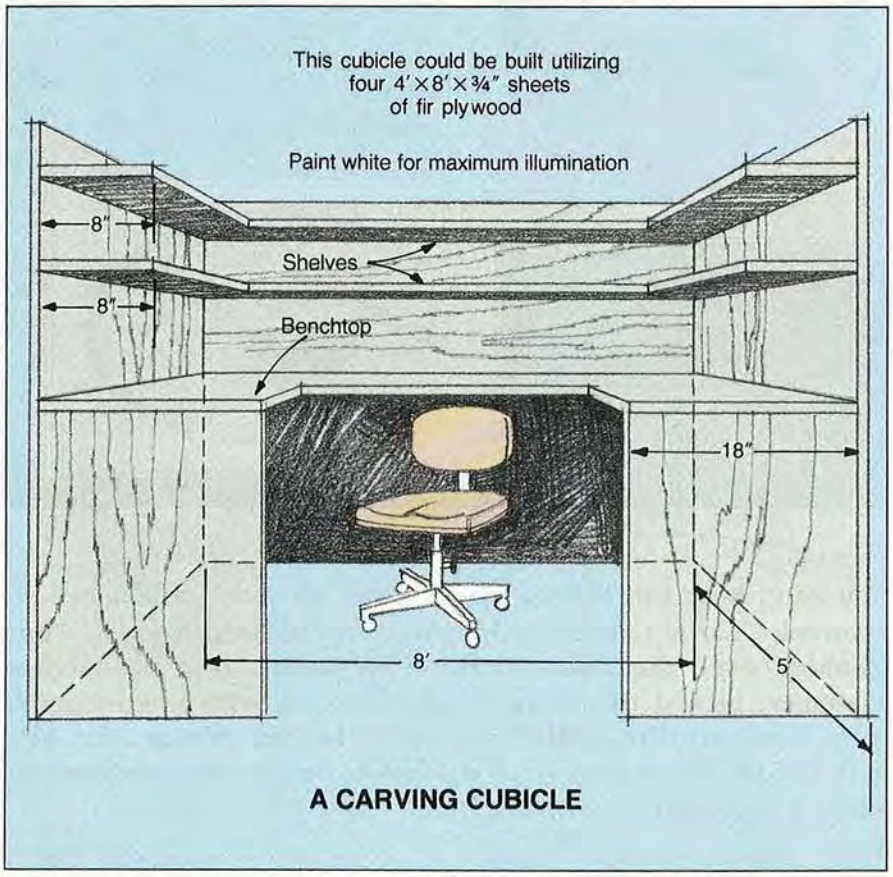
In Cokato, Minnesota, Dave Rasmussen programs computers. He



was on the job when the idea came to him for what he calls his "carving cubicle."

"I sit at my computer terminal in a cubicle made of half-height partition walls," Dave explains. "It occured to me that what I was sitting in was the perfect carving place. So I built one."

Dave's carving cubicle, like the one *below*, meets all his carving needs. "In it, I have an area for carving, one for painting, and another for sharpening," he says.



A CARVING CUBICLE

Fun deserves some respect

Formed in 1990, the Caricature Carvers of America (CCA) presently numbers 15 carvers, each recognized for their special style of caricature. Winners of ribbons in carving competitions across the nation, CCA members have one goal: To heighten the appreciation of caricature carving. Says founding member Harold Enlow: "This type of carving is the most popular of all, but even in carving competitions, it isn't given the special place that it deserves. As an example, a lady asked me one time what it was that I carved. When I told her 'caricatures,' she said, 'That's what you do when you don't have any talent.' "

CCA members hope to change that image by encouraging greater creativity in caricature carving, pursuing higher degrees of excellence, and educating the general public through exhibitions and competitions. For more information on CCA activities, write: *Dave Dunham, corresponding secretary, Caricature Carvers of America, 301 N. Ridgeway, Cleburne, TX 76031.*

Written by Peter J. Stephano Photographs: John Hetherington Drawings: Kim Downing

WILD-KINGDOM

THREE GREAT INTARSIA PATTERNS

Print this article

You can't help but love at least one of these wildlife-accented coatracks. Larry Clayton, our editor and an avid hunter, went bonkers over the duck; Darlene Reynolds, our production manager, picked the hummingbird; and I, with lots of prodding from my three children, opted for the panda bear. Regardless of the critter you build, you better plan on making several. Demand is running high.

Marlen Kemmet

Marlen Kemmet, How-To Editor

COATRACK
TO CHOOSE FROM

Start with the backboard

1 To enlarge the Backboard Grid pattern, cut a piece of heavy paper to 7×24″, and draw a grid having 1″ squares on the paper. Use a straightedge to lay out the straight lines. To lay out the arched top, transfer points where the pattern outline crosses each grid line. Next, draw lines to connect the points (we used a French curve for a smooth flowing line to form the arch). Mark the ¼″ and ⅜″ radii and cut the paper pattern/template to shape.

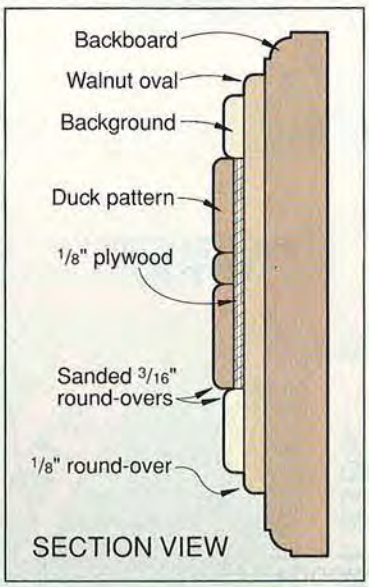
2 From ¾″ oak, cut a piece 7″ wide by 25″ long for the backboard. If you don't have stock this wide, edge-join narrower stock.

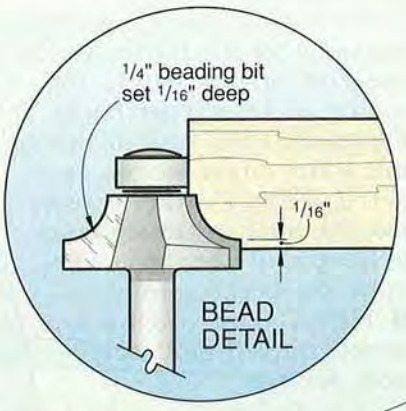
3 Joint the bottom edge of the backboard. Now, position the backboard paper template on the oak stock, making the bottom edges flush. Trace the template's outline onto the oak stock.

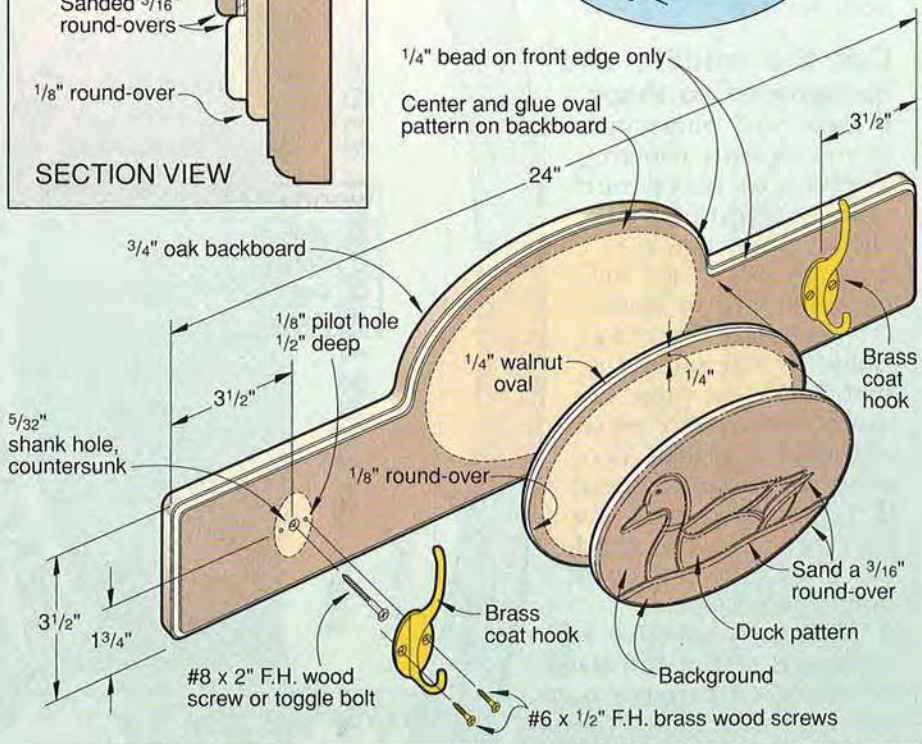
4 Bandsaw the backboard to shape. (When cutting the arched top, we cut just outside the marked outline. Then, we sanded to the line for an even, continuous arch with no flat spots.)

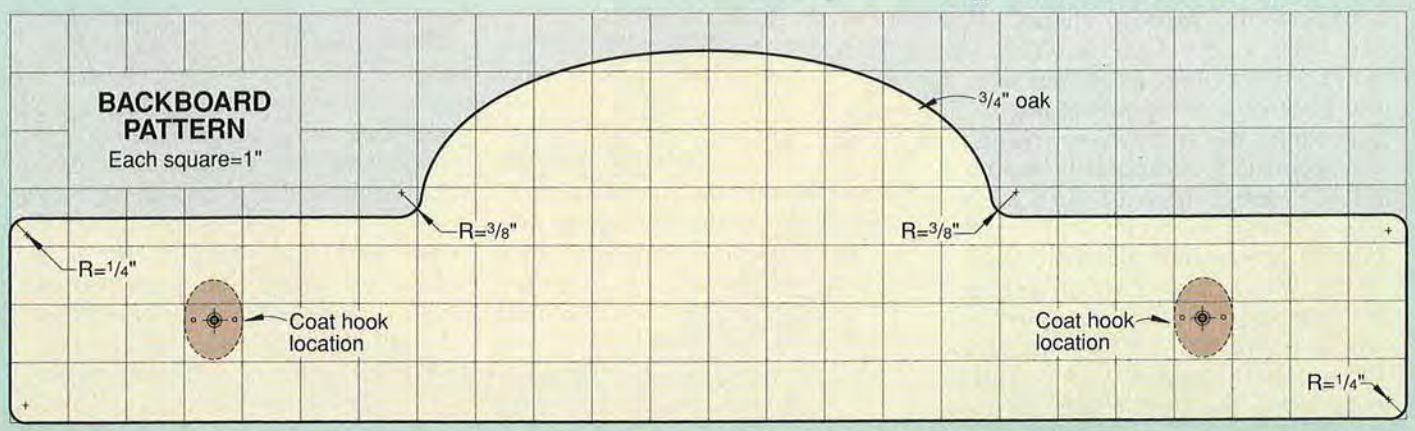
5 Rout a ¼″ bead along the front edge of the backboard. See the Exploded View and accompanying Bead detail for reference.

Continued









COATRACK

6 Using the dimensions on the Exploded View drawing, position the coat hooks on the backboard. Mark the mounting-hole centerpoints. Remove the hooks, and mark centerpoints for mounting the backboard to the wall.

7 Drill the mounting holes where marked. (See the Buying Guide at the end of the article for our source of brass coat hooks and thin stock.) For ease in driving the softer brass screws later, drive #6×½" steel screws into the hook mounting holes to prethread the holes. Remove the steel screws.

8 Finish-sand the backboard smooth and set it aside for now.

Cut the wildlife and background to shape

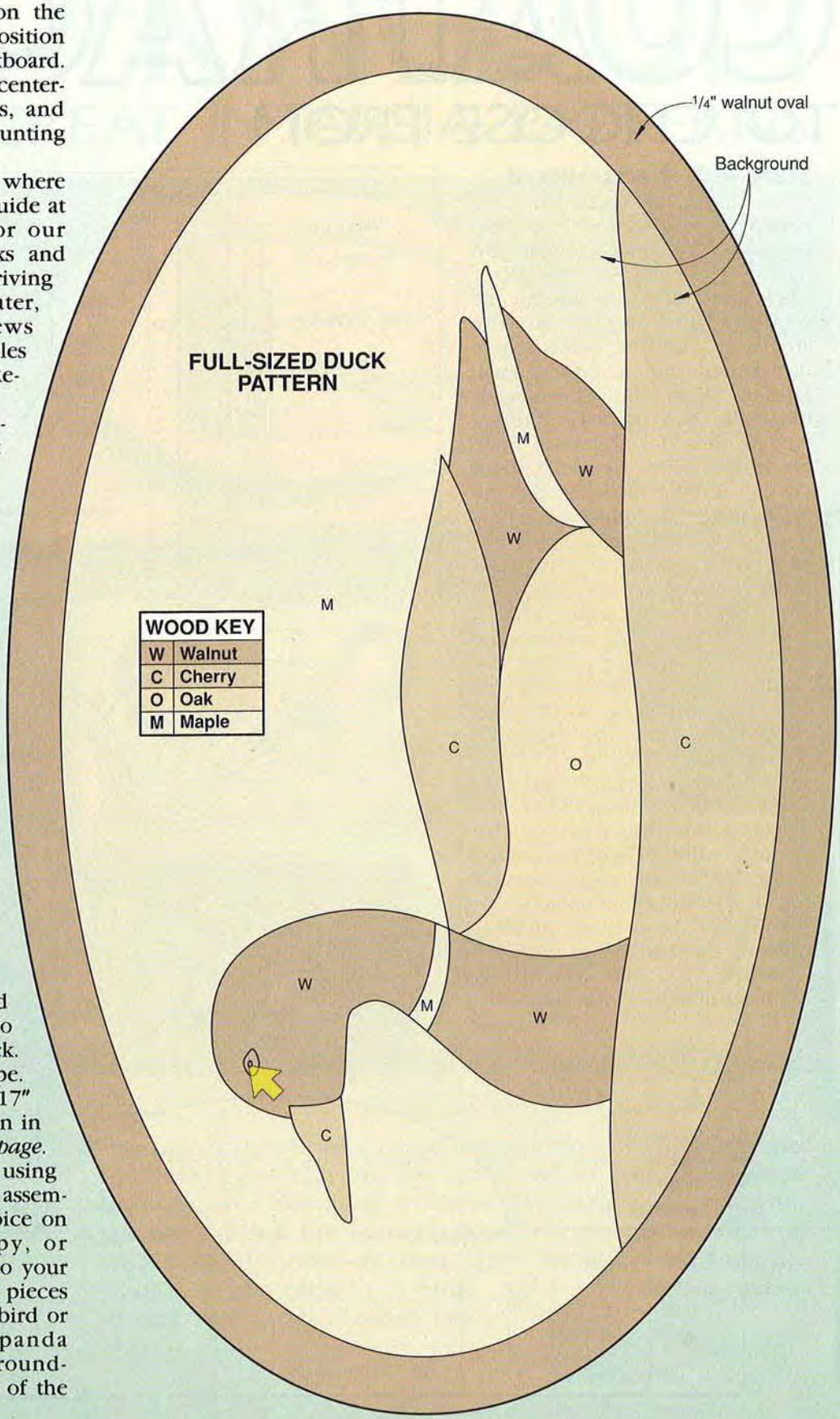
1 Make two photocopies of your favorite pattern.

2 Plane or resaw one piece of walnut, oak, cherry, and maple to ¼" thick by 5×9" for the hummingbird or duck. Or, see the Buying Guide for our source of thin stock. One piece of maple and another piece of walnut is all that's necessary for the panda bear.

3 Temporarily join the four layers of ¼"-thick stock face-to-face with double-faced tape.

4 Using spray adhesive, adhere one of the full-sized photocopied patterns onto the top piece of ¼" stock. Scrollsaw the parts to shape. We used a #8 (.047×.017" w/11.5 TPI) blade as shown in the photo on the *opposite page*.

5 Separate the parts. Now, using the wood key, temporarily assemble the design of your choice on the second pattern copy, or choose pieces that match to your liking. You'll have enough pieces for four separate hummingbird or duck patterns, or two panda bears. Hand-sand a 3/16" roundover along the front edges of the



parts. See the Section View drawing for reference. Be sure to wear a dust mask. We also wore rubber finger pads (sold at office supply stores) to protect our fingers when rounding-over the edges. Do not sand all the way to the back surface. Doing so creates voids between the parts when gluing them together.

6 Position the body parts (not the background pieces) on a piece of ⅛" plywood or other thin stock. Trace around the perimeter of the figure. Remove the parts and cut the pattern to shape, cutting slightly inside the marked outline.

7 Apply woodworker's glue or epoxy to the backing, and lay the parts into position. If using woodworker's glue, weight the parts with a flat heavy object such as a clothes iron or scrap plywood weighted with a paint can.

8 After the glue dries, round-over the edges of the backing by sanding to make it even less visible.

Add the walnut oval

***Note:** If you're crafting the panda bear, you can skip steps 1, 2, 3, and 4 below. The bear doesn't require the walnut oval.*

1 Cut a piece of ¼" walnut to 5½" wide by 9" long. Adhere the second photocopy to it.

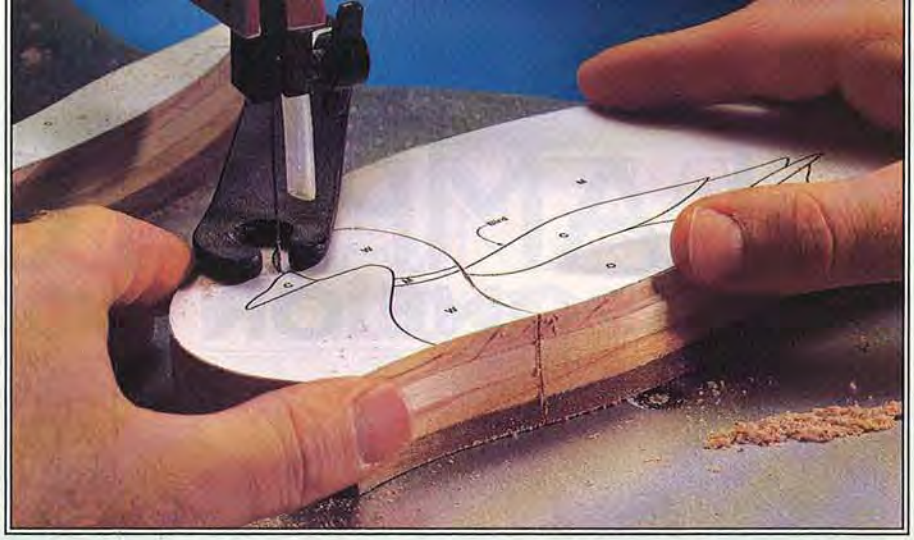
2 Cut the walnut oval to shape, cutting slightly outside the marked outline and sand to it.

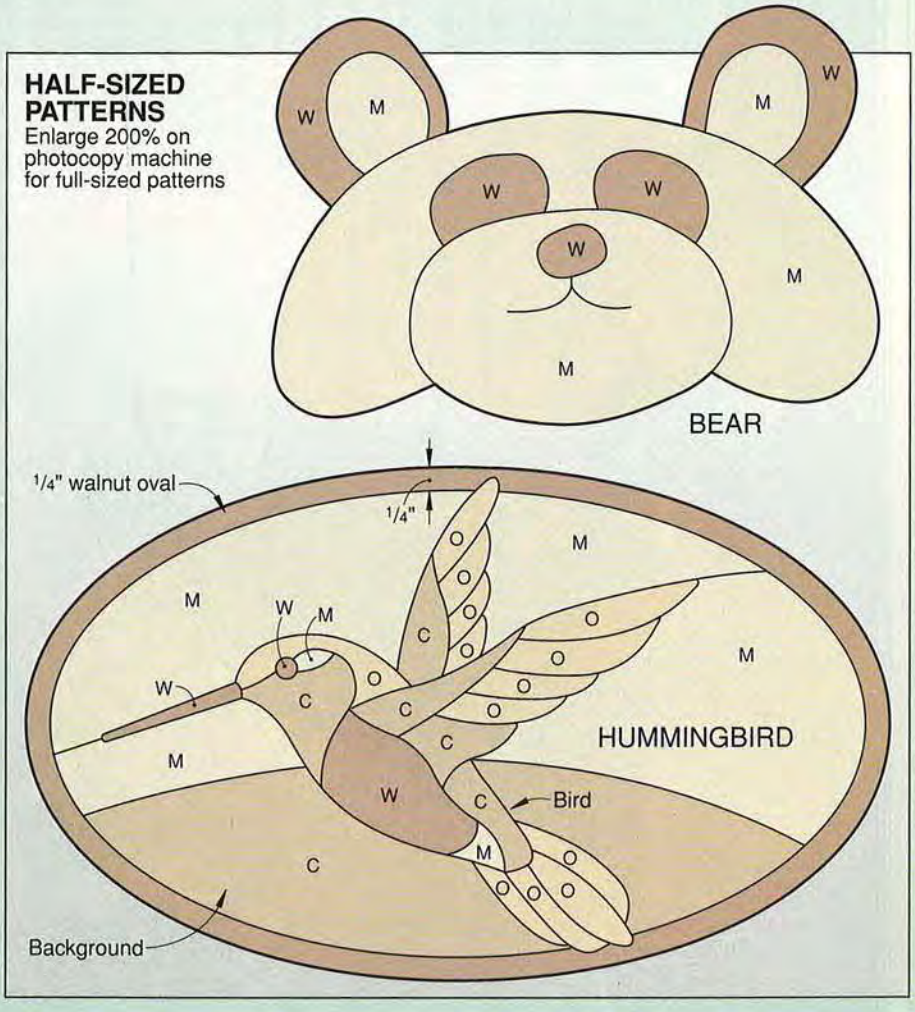
3 Sand a ⅛" round-over along the entire front edge of the oval. Next, finish-sand the oval.

4 Position the pieces, and glue and clamp the pattern and background pieces to the walnut oval. Leave an even ¼" of the walnut exposed along all edges.

5 Center and glue the oval/pattern assembly to the backboard where shown on the Exploded View drawing.

6 Apply a clear finish (we used aerosol lacquer). Fasten the backboard to the wall with wood screws if you can hit studs. Or use toggle bolts if you can't. Screw the coat hooks to the backboard.





Buying Guide

• **Thin stock and coat hooks.** One piece of walnut, oak, cherry, and maple ¼" thick by 5×9" (enough for the wildlife pattern lamination), one piece of ¼" walnut 5½" wide by 10" long for the oval, and two coat hooks needed per coatrack, stock no. 88163, $25.95, plus $5.50 postage and handling per order. The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374-9514. Or call 612/428-3200 to order.

Produced by Marlen Kemmet
Project Designs: James R. Downing

Photographs: Wm. Hopkins
Illustrations: Kim Downing

CLAMP-STORAGE
MAKE ONE OR MORE OF OUR

Print this article

EXTRAVAGANZA
FIVE CUSTOM HOLDERS

Guide to our five great holders

1 SPRING-CLAMP HOLDER

2 SLIDING-HEAD AND QUICK-GRIP CLAMP RACK

3 LOCKING C-CLAMP SUPPORT

4 C-CLAMP RACK

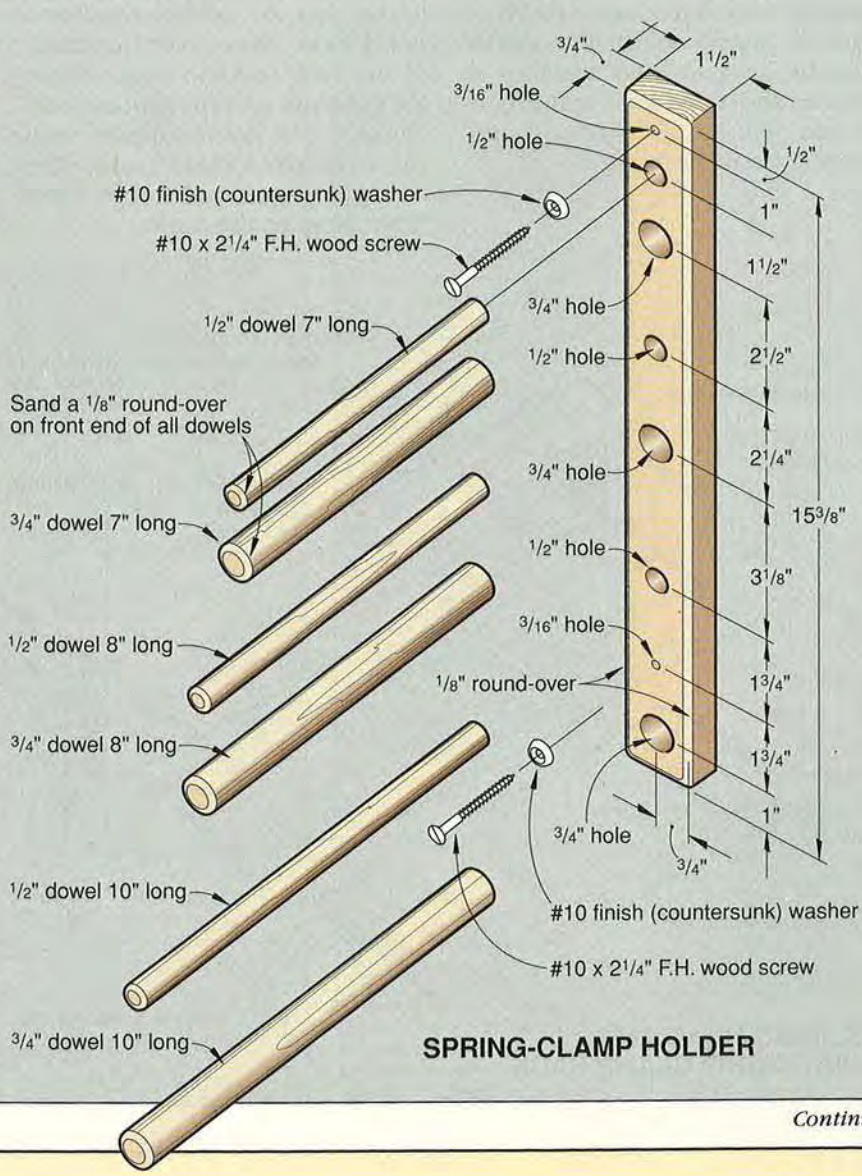
5 HANDSCREW CLAMP ORGANIZER

Solve your clamp-storage problem once and for all with this fine selection of wall-hung helpers proven effective in our Idea Shop. Not only do they keep all your clamps at arm's reach, they also look darn good doing it.

1 Simple, sturdy, spring-clamp holder

A backboard with protruding dowels does the job for supporting 4", 6", and 9"-long spring clamps. If you've got a similar assortment of these clamps, the rack shown here should suffice. If you've got quite a collection, extend the board or make two or more holders as needed.

We don't recommend extending the dowels longer than dimensioned on the drawing at *right*. Extended too far, they can get bumped and broken.



SPRING-CLAMP HOLDER

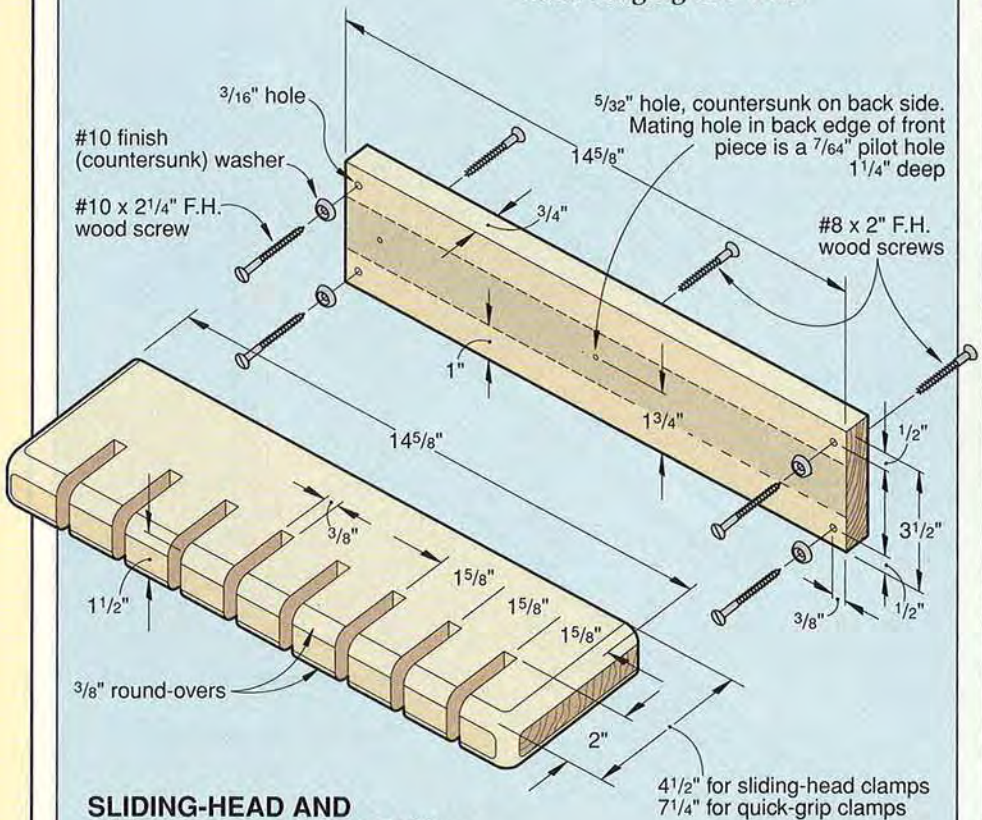
Continued

2 A home for sliding-head and Quick-Grip clamps

The slots in this quick-and-easy holder allow you to store your sliding-head clamps in perfect order by simply resting the head on the horizontal support. Without the slots, you'd have to tighten the jaws to hold a clamp in place, and then loosen the jaws when you want to remove the clamp from the holder.

To make the slots, cut the horizontal support to shape, rout the edges and corners, and mark the notches 1⅝" on center. Mount a ⅜" dado blade to your tablesaw, and raise the blade 2" above the saw table. Mount a wood extension to your miter gauge, and make the cuts where marked. As shown in the opening photo, we built and placed three racks end to end. You could also lengthen the two parts and cut the number of slots needed to match your supply of clamps.

For Quick-Grip clamps, we found that an extended version (2¾" more from front to back) of the rack used to support our sliding-head clamps works wonderfully. The front support with its numerous slots holds the clamps upright and keeps them from dinging the wall.



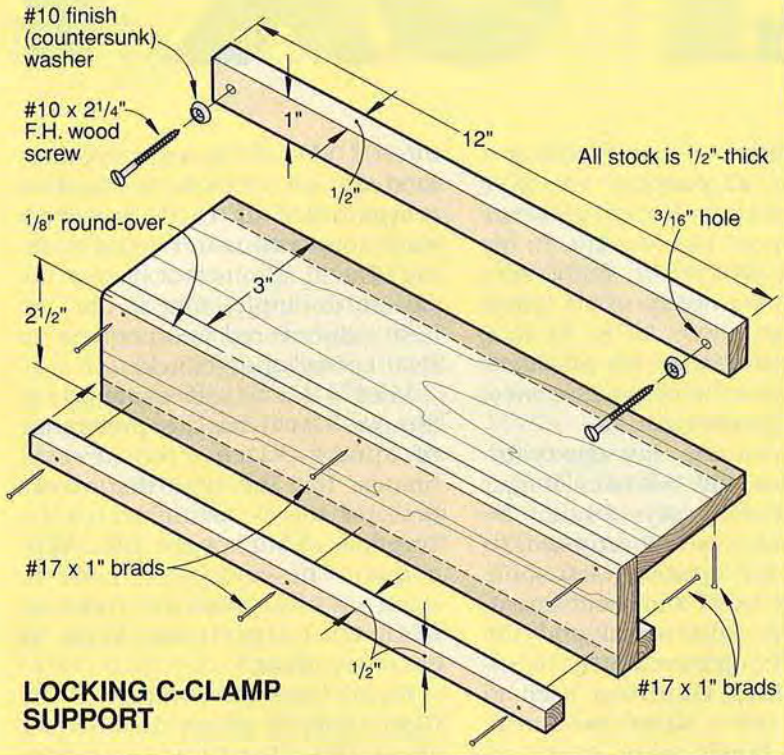
SLIDING-HEAD AND QUICK-GRIP CLAMP RACK

3 Nifty support for locking C-clamps

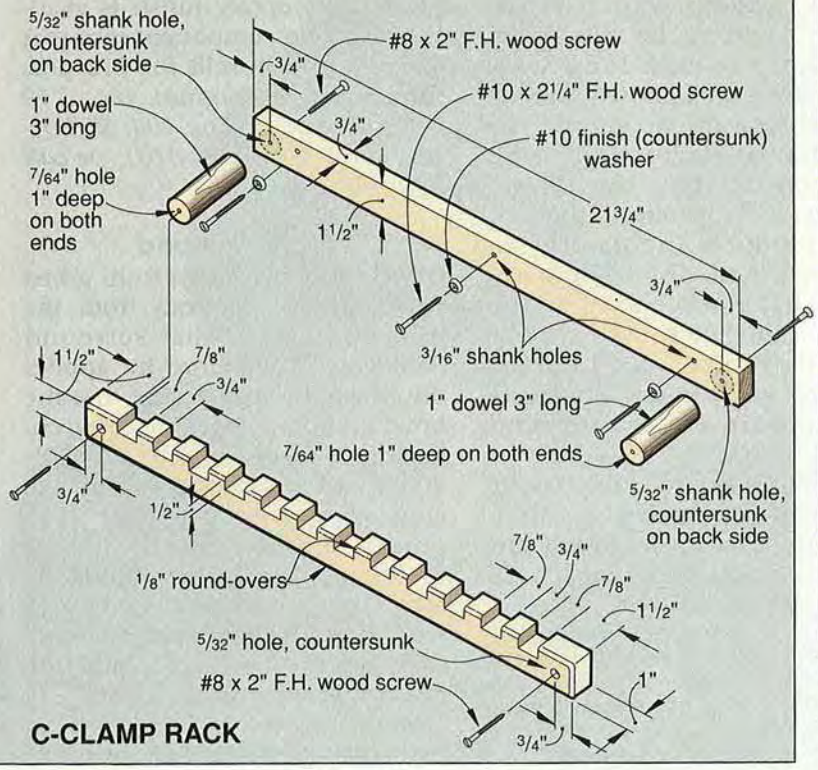
Projects often require clamping pressure applied several inches in from the outside edges for a good bond. When this happens, we turn to our locking C-clamps, the largest of which has a throat depth of over 15". To hang our collection of locking C-clamps, we found this screw-together support an organizer's dream.

4 All-in-a-row C-clamp rack

When the job calls for plenty of clamping pressure, no-nonsense C-clamps provide the answer. To hang and organize this type of clamp, build our four-piece wall-mounted hanger with its notched front support. The notches allow you to hang the clamps on the rack without having to tighten them.



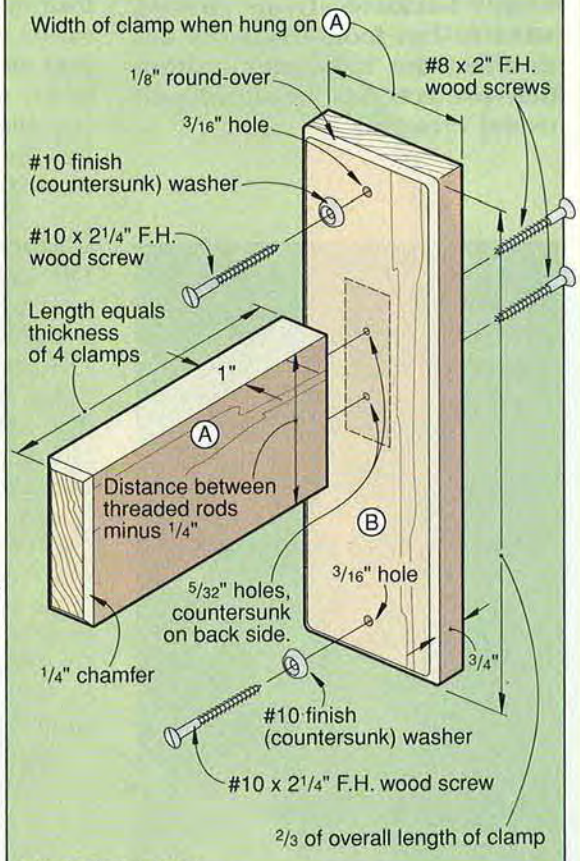
LOCKING C-CLAMP SUPPORT



C-CLAMP RACK

5 Handscrew clamp hangout

If there was ever a simpler organizer for handscrew clamps, we haven't seen it. Just cut the support extension (A) to fit between the threaded rods of the clamp, chamfer the outside end of the support, and securely mount it to the backboard (B). We've found that about four clamps per support is a full load.



HANDSCREW CLAMP ORGANIZER

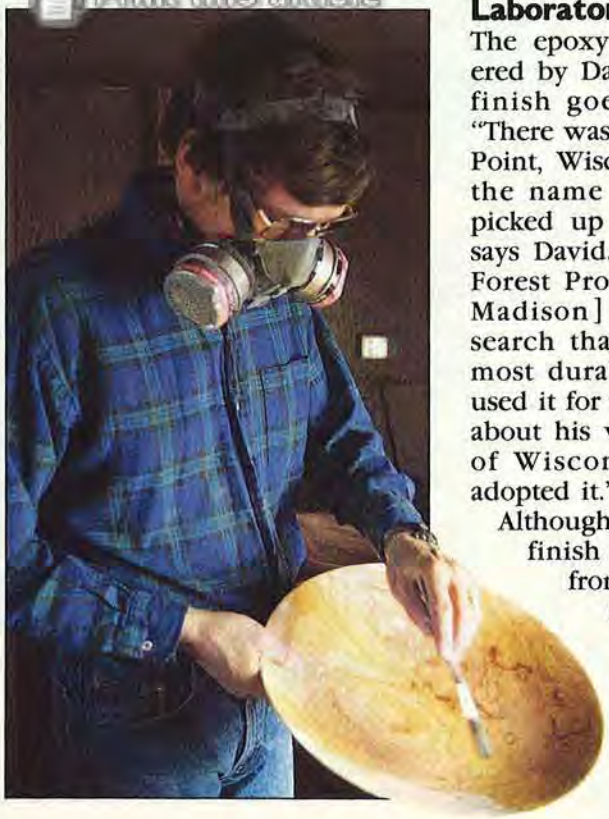
Produced by Marlen Kemmet
Project Designs: Richard Tollesfson; Jim Boelling; James R. Downing
Photographs: Wm. Hopkins
Illustrations: Roxanne LeMoine

EPOXY:

Platteville, Wisconsin, woodturner David Lory with a thin-walled bowl made of locally harvested burled white ash.

David Lory guarantees his finish to last as long as his bowls. That's because—from chilled salad to hot food—contents fail to affect the low-luster coating that protects his beautiful and useful creations.

Print this article



"Avoid runs because they just build up," says David about applying epoxy. He doesn't wear gloves because they tend to stick to the finish.

If you think of epoxy only as a tough, all-purpose adhesive for joining, let woodturner David Lory set you straight. In his Platteville, Wisconsin, studio he's been applying epoxy to his bowls for a finish since 1978. In fact, he's so confident of his product's durability that he offers customers a lifetime guarantee.

"In normal use, my epoxy-finished bowls will last even longer than a lifetime," says David. "So far, I've had very few returned. In one case, the customer left some fruit in the bowl and went on vacation. The fruit rotted and the acid ate through the finish. In another, a sharp knife was used to cut salad and it sliced the finish. But both bowls were easily resanded and refinished."

Laboratory-rated toughness

The epoxy finish wasn't discovered by David. As he tells it, the finish goes back a long way. "There was a well-known Mineral Point, Wisconsin, woodturner by the name of Harry Nohr who picked up on it in the 1950s," says David. "Apparently, the U.S. Forest Products Laboratory [in Madison] had done some research that rated epoxy as the most durable of finishes. Nohr used it for two decades. I learned about his work at the University of Wisconsin-Platteville, and adopted it."

Although his utilitarian epoxy finish can stand everything from ice cream to hot stir-fried vegetables (it's even USDA-FDA approved as food-safe and can take sterilization temperature of 150°, but with only soap-and-water handwashing) David admits that it's not the easiest to apply. Yet so far, he hasn't discovered another way to rival epoxy's ruggedness.

Like all skilled craftsmen, though, David has his preference of epoxy. "I've tried several brands, but the type that works best for me is manufactured by Torginal, of Sheboygan Falls, Wisconsin," he says. "It's made to stand up as a protective finish in industrial situations, such as creamery walls."

David buys the company's 100 Clear Gloss in gallon quantity for about $60. "The Clear Gloss dries clear, while their satin looks a little milky," he notes. "And the consistency is varnish-like." (100 Clear Gloss epoxy finish is available as a two-component mix that makes a pint. It sells for $12 plus shipping from *Torginal, Inc., 710 Forest Ave., P.O. Box 102, Sheboygan Falls, WI 33085-0101, or call 800/558-7596.*)

Begin with dry wood

David turns his bowls from green wood that he harvests from the hilly woodlands that surround Platteville. But before he applies the finish, he makes sure that the bowl is thoroughly dry (by oven-baking it for 5–7 hours at 150°-200°) and sanded smooth on the lathe with grits up to 240. "The epoxy reacts—clouds up—if there's moisture in the wood," he says. "And, it can't penetrate as well. I also have to round off any sharp edges on the lip because the finish will wear faster there."

David mixes his finish from two equal parts, just like the adhe-

Nearly as tough as nails and beautiful, too

sive-type epoxy. Then he lets the mix stand for about half an hour so that it can "react." And experience proves that certain conditions work best.

"I do all of my application in a room temperature of about 75°," says David. "If it's colder, it will go on too thick and sag. When it's warmer, it dries too fast and leaves brush marks, which are hard to sand out."

Yes, David does use a brush to apply the epoxy finish. For best results, he suggests a natural-bristle one 1½" wide, and the cheaper the better, because the finish won't rinse out. The turner wears a mask to block out noxious fumes. (Although David doesn't wear gloves, we recommend them to keep the hard-to-remove epoxy off your hands.)

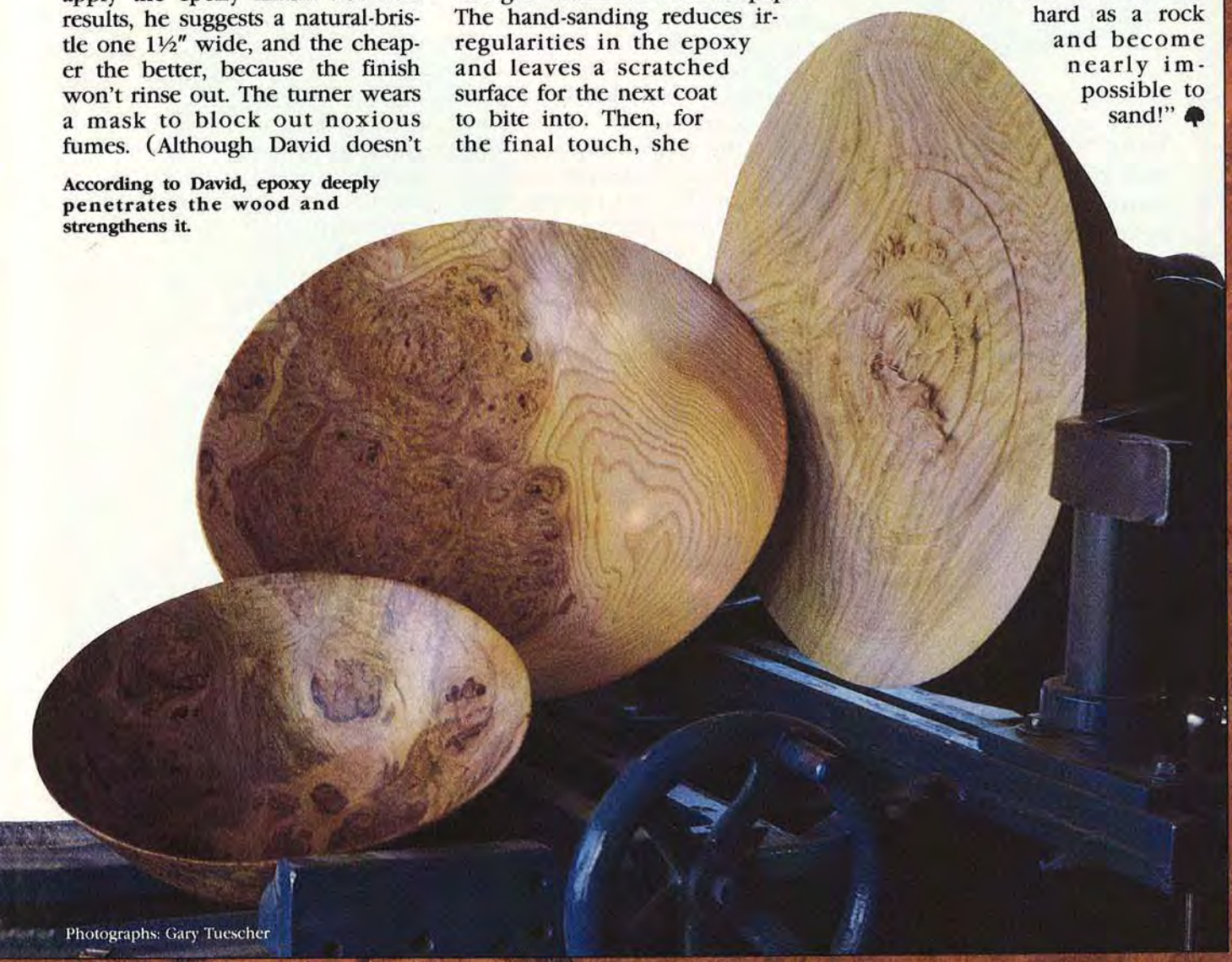
Sand the shine away

Each of the 600 bowls that David makes each year receives the same treatment: five coats of epoxy with sanding after each. Suella, David's wife, does all the finish-sanding.

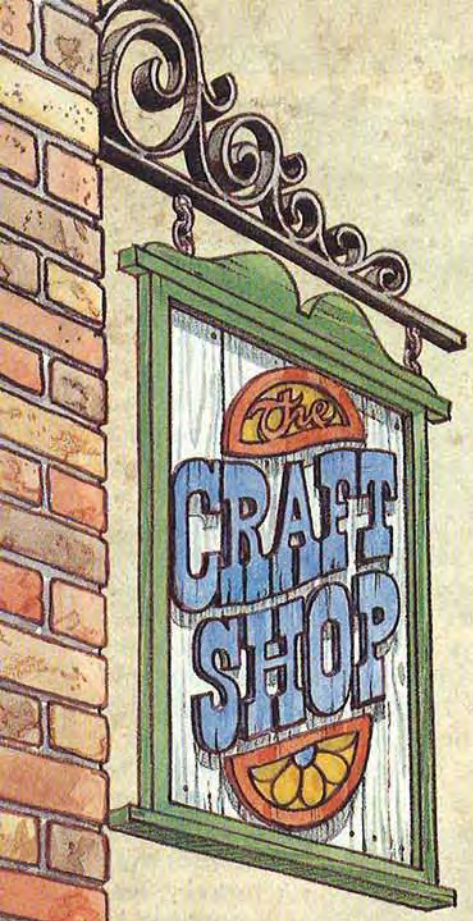
Suella hand-sands between each of the four layering coats with 180-grit aluminum oxide paper. The hand-sanding reduces irregularities in the epoxy and leaves a scratched surface for the next coat to bite into. Then, for the final touch, she goes over the fifth, or last, coat with a progression of 00 to 0000 steel wool. Lastly, Suella rubs the entire bowl down with 0000 steel wool dabbed in rottenstone. "It only takes me about 30 minutes of sanding—total—to do a 7"-diameter salad bowl," Suella notes.

Says David: "Epoxy dries to the touch in about one-half hour, and takes 24 hours to dry for sanding. But never let it dry as long as a week, though, between coats," he warns. "It will cure hard as a rock and become nearly impossible to sand!"

According to David, epoxy deeply penetrates the wood and strengthens it.



Photographs: Gary Tuescher



PLANT
With a cockatoo

Your tropical plant will look right at home hanging from this colorful wall bracket. Build several of these easy scrollsawed hangers, and turn almost any room into a green and growing paradise.

Print this article

Cut three pieces of Baltic birch plywood ⅛×10×10″. Temporarily laminate two of them, good sides out, with double-faced tape.

Enlarge the pattern, *opposite page*, with a photocopying machine set to 141 percent. With spray adhesive, affix the pattern to the laminated stock.

Drill ⅛″ blade start holes where indicated. Starting with the small triangular area on the left side, insert the scrollsaw blade through each hole to cut along the *red* pattern lines. (We used a #7 scrollsaw blade, .045×.017″ with 11.5 teeth per inch.)

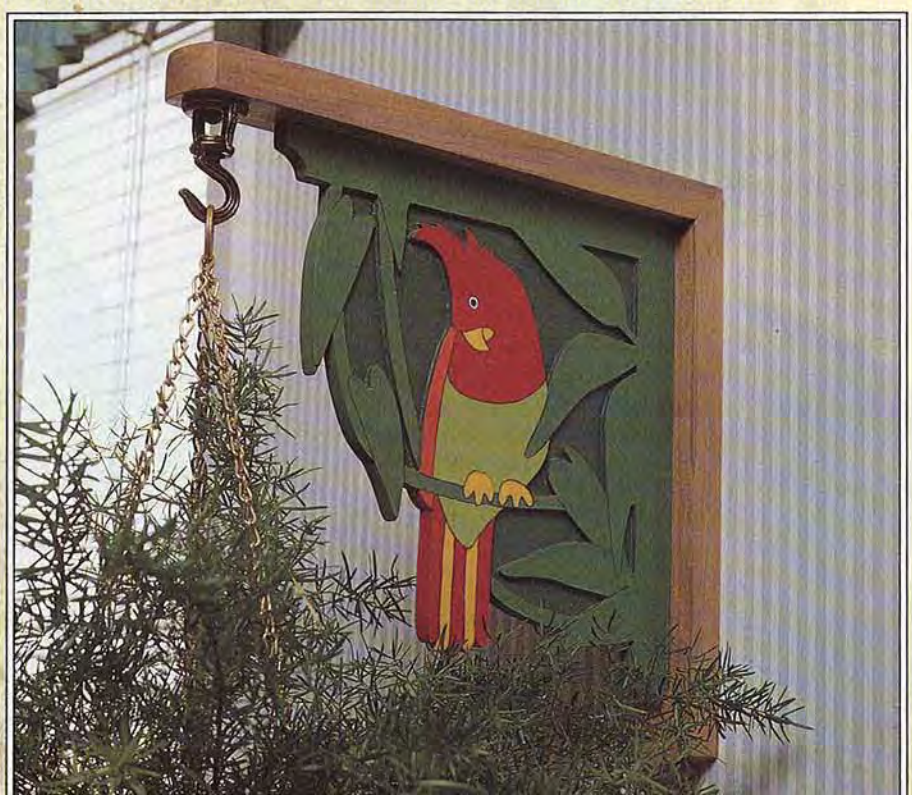
After you complete the interior cuts, separate the two pieces. Leave the pattern attached. Sandwich the remaining piece of stock between the two cutouts, with the patterned piece on top. Glue the three together, aligning the edges, and clamp. When dry, cut the outside shape, following the *purple* pattern line.

Cut a ¾×1½×12″ top arm and a ¾×1½×11″ back for the hanger. Starting from one end, rout a ⅜×⅜″ groove 9⅜″ long centered on one side of each. Miter-cut the grooved end, making the grooved side the short face. On the other end, mark and saw a 1½″ radius.

Drill a ¼″ hole where shown on the top arm. Drill a ½″ counterbore ¼″ deep on the ungrooved side. Dry-assemble the parts to test their fit. Finish-sand all parts.

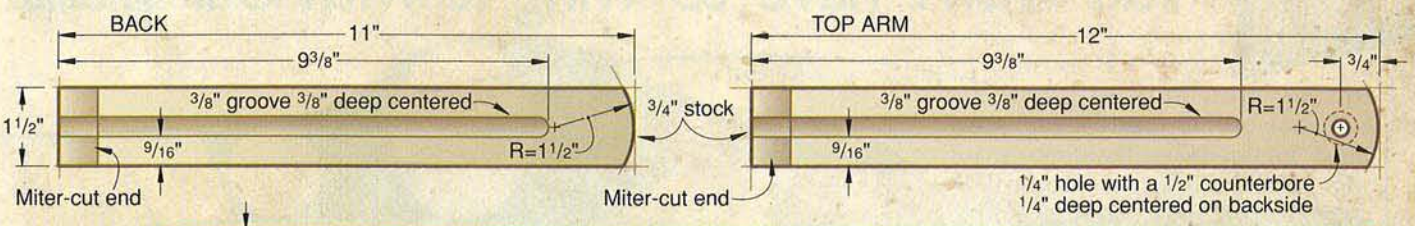
Paint with acrylic artist's colors, following the color scheme shown or your own. When painting the foliage, go a little way onto the tongue that fits into the grooved top arm and back; this prevents bare wood from showing along the edges. For the bird, we painted the front view on both sides.

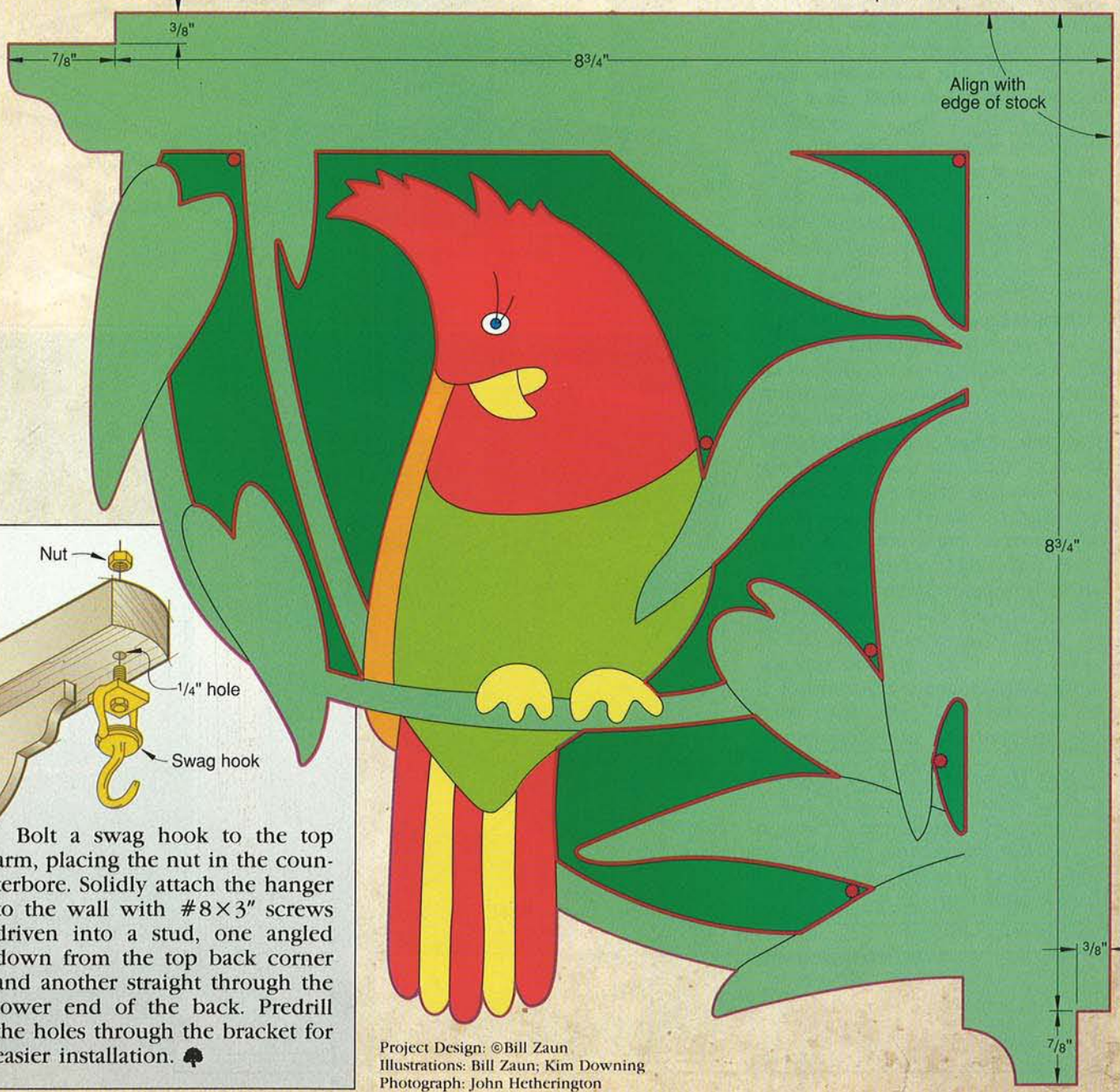
Glue the parts together and clamp. Finish the top arm and back with clear polyurethane.



HANGER FROM PARADISE

that caws attention to it



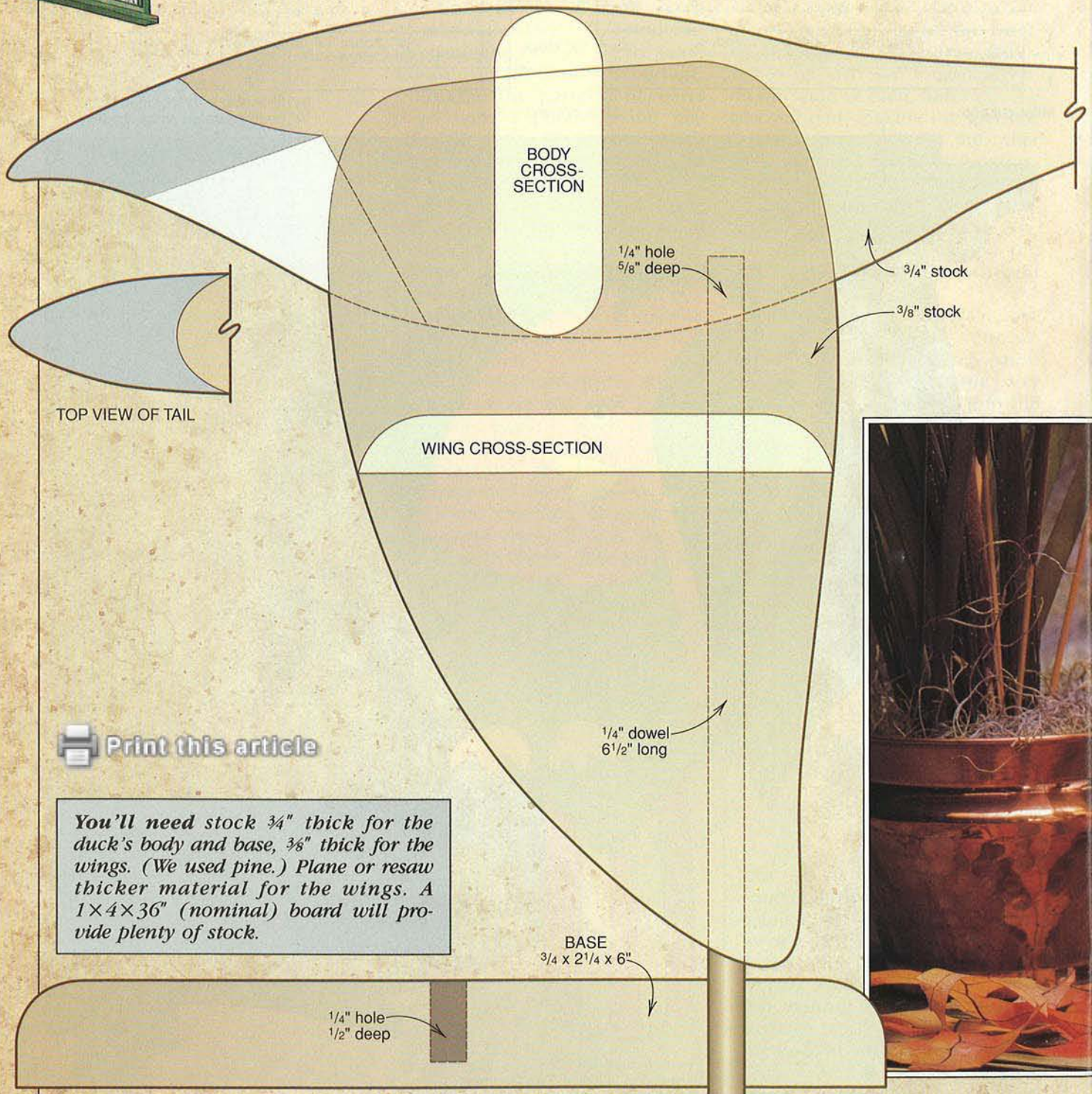


Bolt a swag hook to the top arm, placing the nut in the counterbore. Solidly attach the hanger to the wall with #8×3″ screws driven into a stud, one angled down from the top back corner and another straight through the lower end of the back. Predrill the holes through the bracket for easier installation.

Project Design: ©Bill Zaun
Illustrations: Bill Zaun; Kim Downing
Photograph: John Hetherington

DECORATOR

You won't have to wing it with our plans

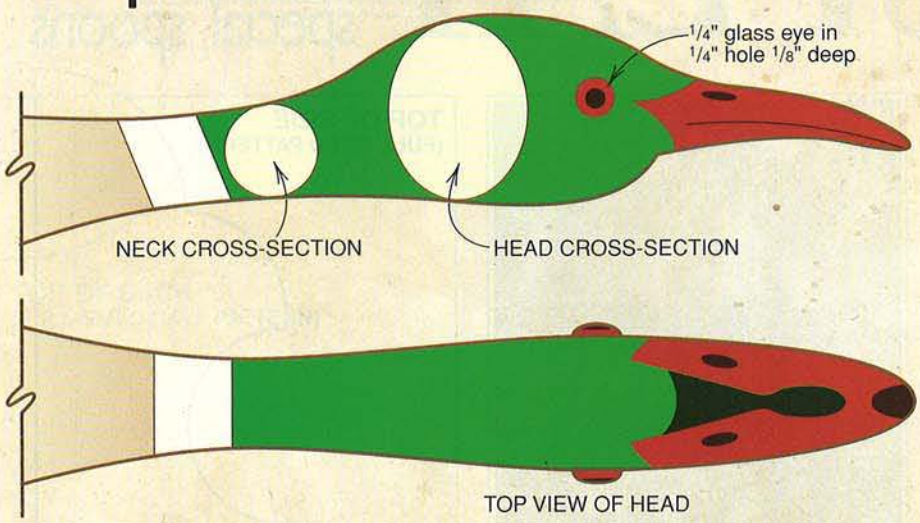


Print this article

You'll need *stock ¾" thick for the duck's body and base, ⅜" thick for the wings. (We used pine.) Plane or resaw thicker material for the wings. A 1×4×36" (nominal) board will provide plenty of stock.*

DUCK
and patterns

If something's ruffled your feathers, turn to our decorator duck for help. Just let the cares of the day head south while you saw and sand this graceful tabletop merganser to shape.



Trace the full-sized pattern for the body onto a ¾ × 2½ × 13" piece of pine. Trace the wing pattern onto two pieces ⅜ × 3½ × 7".

On the bottom edge of the body stock, lay out the location for a centered ¼"-diameter hole 5" from the tip of the duck's tail. With a drill press and a brad-point bit, drill the hole about ⅝" deep.

Mark a center where shown on each side of the head for the ¼" eye hole. Drill those holes about ⅛" deep.

Bandsaw or scrollsaw the body. Then, cut out the wings. Now, sand round-overs along the top edge of each wing. Sand to the cross-section shown on the full-sized pattern. After rounding over the edge of one wing, make sure you round over the opposite side of the remaining one so you'll have left and right wings. (A pneumatic sanding drum works great for this project. If you don't have one, use your stationary belt sander or a flap sander.)

Sand the body to the cross-sections shown. Note on the top view that the duck narrows to 7/16" at the neck. Make the head ⅝" thick. Taper the tail and beak.

For the base, cut a piece ¾ × 2¼ × 6". Center a ¼" hole on the top side, and drill it ⅝" deep.

Round over the top edges of the base. Glue a 6½"-long piece of ¼" dowel rod into the hole on the bottom of the body.

Finish-sand, and paint as shown with acrylic artist colors. Glue the eyes (available from crafts shops) into place. Then, glue the wings on where shown, aligning their edges. Apply a clear oil finish overall, and insert the dowel into the base hole.

Project Design: ©Iolart, Howard and Mariann Eggleston
Illustrations: Mike Henry; Kim Downing
Photograph: Wm. Hopkins

A STIRRING DISPLAY

Showplace for special spoons

We think that collectible spoons deserve better treatment than being stashed in some drawer. Here's an easy-to-build display rack that puts teaspoons or demitasse spoons where you—and everyone else—can enjoy them.

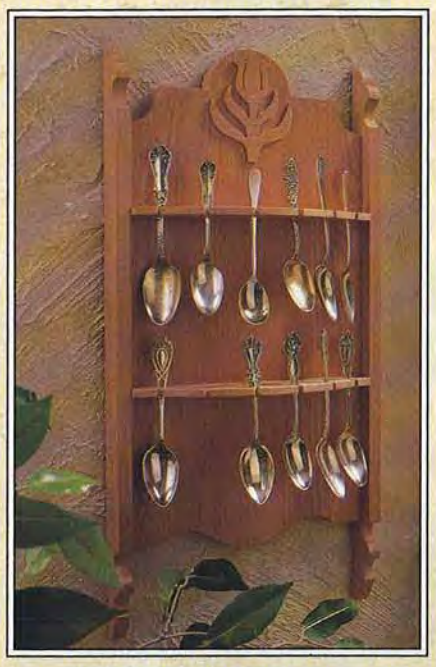
Cut stock to the dimensions shown in the Bill of Materials. (We resawed and planed thicker material for the thin stock. For the 9"-wide part A, we glued up two narrower pieces.)

Photocopy the half-patterns for the top and bottom profiles of the back, *opposite page*. Make full patterns, and trace them onto the stock for part A, using carbon paper or transfer paper. Bandsaw or scrollsaw Part A. Rout a keyhole hanging slot near the top center on the back face.

Transfer the full-sized patterns for the sides' top and bottom curves onto one 1¼"-wide face of one side (B). Stack the two parts B with double-faced tape between them, placing the patterned piece on top. Bandsaw the two sides, and sand them.

Lay out the spoon holders (C) on your stock. Make two to display teaspoons, three for demitasse spoons. Stack the parts, and then bandsaw or scrollsaw them.

To form the bowl depressions, chuck a core-box router bit into your drill press. With the workpiece secured firmly, bring the bit down onto the mark deep enough to make a ⅜"-diameter depression. Set the drill-press depth gauge at that point to make the rest of the depressions uniform.

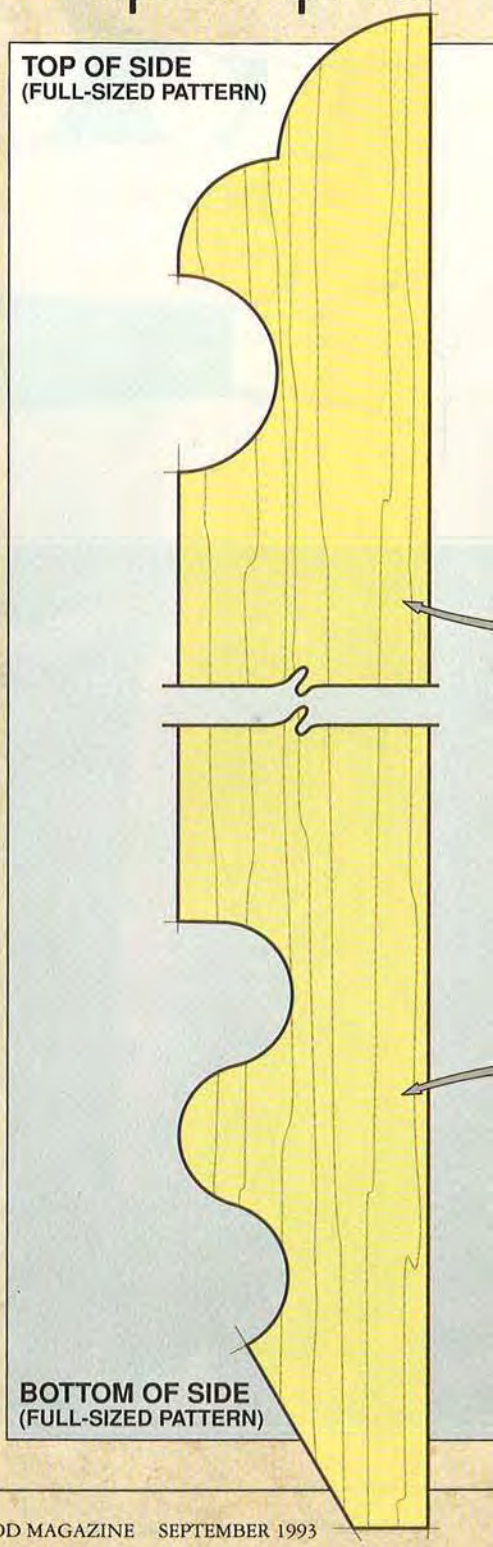


After forming all of the bowl depressions, drill a ¼" hole (or one to fit your spoons, if different) in the center of each. Bandsaw or scrollsaw a ⅛"-wide slot straight in from the edge to each drilled hole. Sand the parts.

Mark the spoon-holder locations where shown on part A, depending on your spoon size. Rout a ¼" dado ¼" deep across part A at each location. Glue the holders into place with the bowl depressions facing up. Glue on the sides (B), placing the back edge of each flush with the back face of part A. Sand the assembly.

Scrollsaw the decoration from ⅛" stock. Sand, and glue it to the back piece where shown. Apply a clear finish overall.

Project Design: ©Workshop Blueprint Co., David Ashe
Illustrations: Mike Henry
Photograph: Wm. Hopkins

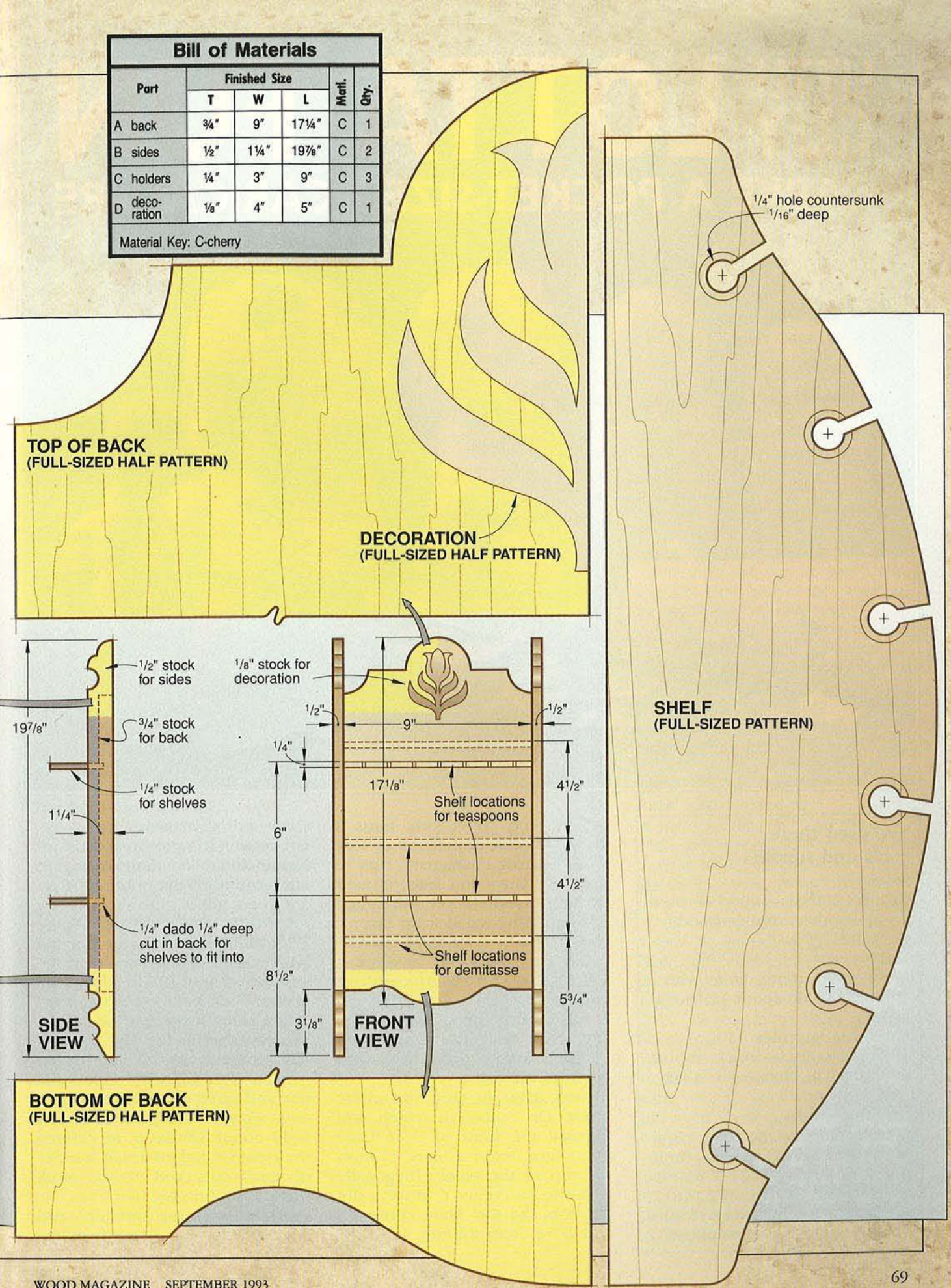


Print this article

Bill of Materials

Part	Finished Size			Matl.	Qty.
	T	W	L		
A back	¾"	9"	17¼"	C	1
B sides	½"	1¼"	19⅞"	C	2
C holders	¼"	3"	9"	C	3
D decoration	⅛"	4"	5"	C	1

Material Key: C-cherry



LITTLE GUY LOTTA FUN

CARVE A POCKET-SIZED CARICATURE

We used these tools and supplies

Stock

1×1×2¼" basswood, butternut, or other carving wood

Knife

Any woodcarving knife with a pointed blade about 1½" long

Finishing supplies

Acrylic colors—black, white, red, brown, blue, flesh, silver

Buying Guide

Book. *Carving the Little Guys*, $9.95 ppd. in U.S. Order from Keith Randich, 211 Woodsmoke Lane, Greece, NY 14612. NY state residents add 65¢ sales tax. No phone orders, please.

Greece, New York, hosts a sizable population of very small characters. They're the Little Guys and Gals, created by Keith Randich. Keith designed this Little Guy woodcarver just for you. Here's how to carve him:

On one square end of a 1×1×2¼" block of carving wood, letter the corners clockwise A to D. Turn the other end up, and carve away the corners and edges to form a dome that starts ½" from the top.

Next, draw the chin line on the block. On corner *A*, which will become the front of your Little Guy's face, make a mark 1" from the top of the block. Diagonally opposite on corner *C*, place a dot ⅝" from the top. Mark corners *B* and *D* ¾" from the top, and then draw a line around the block, connecting the points. Your block should look like the one in the background of the photo.

An uppercut to the chin

With the blade of your carving knife perpendicular to the wood surface, stop-cut the chin line about ⅛" deep. (A *stop cut*, an incision along a pattern line, allows you to carve to the line without chipping out wood beyond it.)

Then, start about ¼" below the line and carve up to it, forming an edge around the bottom of the head about ⅛" deep. In carving the Little Guy, think small; a series of small cuts will always work better than one big one.

Round the top corners and edges of the body down from the

Print this article

chin line about ¼". Round the head down to the chin line on the sides and back, but leave the front (corner *A)* alone, for now.

Now, draw a horizontal line on the body ¼" from the bottom between corners *A* and *D*. This marks the height of the Little Guy's shoes. On the same side, which is the front of the body, draw two centered parallel vertical lines ¼" apart. Also draw a vertical line down the center of each side. Your block should now look like the second one from the back in the photo.

Stand him on his own 2 feet

Stop-cut the shoe line. From ¼" above it, carve down and inward to cut out a wedge straight across the body. Stop-cut and carve until the notch reaches ¼" deep at the shoe line. This will be the front of the legs.

You may be worried by now that you've gone wrong; your carving begins to look as if it's going to be all head and feet. But you're okay. Little Guys, Keith notes, "are conspicuous by their big heads and shoes."

Slice the corners from the front of the body. Round the torso between the lines on the front and each side. Slope the front from the waist (that's right at the top of the notch) to the top of the body. Leave the back flat, for now.

You've carved the front of the legs, now do the back. Draw a horizontal line ⅜" from the bottom edge between corners *B* and *C*. Then, with a rolling motion of your wrist, carve an arc down and in from the line to the bottom of the block. Cut to about ¼" deep at the heels, shown on the side view drawing *right*.

Make a vertical stop cut down the center of the arc. Then, deepen it and widen it to a V cut, and round the edges until you see two separate legs.

Don't actually divide the legs; just carve deep enough so that they appear divided. A sharp stop cut in the bottom of the V will add to the impression.

Round the outside edges at the back of the legs. Then, making stop cuts, V cuts, and rounding the edges, carve the front of the legs and the shoes.

And when you carve the shoes, remember: Little Guys love big, clodhopper shoes. Separate the shoes about 5/16" back, and leave about 3/16" between them at the toes. Then, round the corners and edges about halfway down.

Square those shoulders

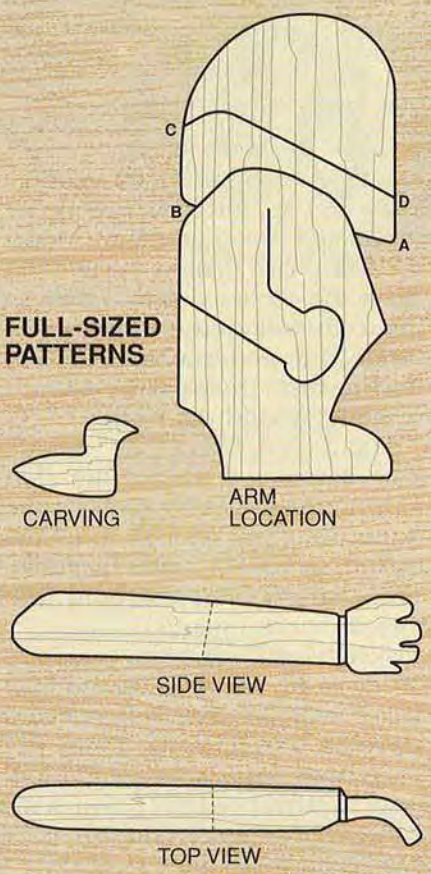
You'll see that one shoulder has ended up higher than the other when you look at the figure from the back. Slice away the higher shoulder until they look even.

Now, carve one arm on the body. Later, you'll carve and attach the other one.

Little Guys always look away from the carved-in arm—that's just one of their traits. So, sketch an arm on the right side of the body (left side, looking from head-on). Draw it about ½" wide at the shoulder, about ⅜" below the elbow, with a mitten-shaped hand. (See the illustration *left.*)

Stop-cut, and then carve away the side of the body to set the arm out about ¼". Taper it into the shoulder, and round over the edges. The body looks lopsided after carving the arm, so pare away the left side above the waist to bring it into balance.

Your carving should now look like the one right behind the Little Guy in the photograph, the one that seems to be wearing an astronaut's helmet. Turning that helmet into a face will give your carving personality.



Now, make this guy look like someone

"I like to carve faces on my guys and gals as soon as I've roughed out the body," Keith says. "Since the face is the most prominent part, I let it dictate what the rest of the character will look like." When he carves a gruff-looking face, Keith will more likely finish the body as a cowboy rather than, say, a minister.

As you carve the face, remember: Little Guys are caricatures. You want to exaggerate features as much as possible. Sharpen your knife before you start the face, and keep it sharp for best success with the tiny details.

Study the six illustrations of the head on the *next page* before you begin carving. Then, place a pencil mark midway up the head on its front corner (A).

Continued

LITTLE GUY

Starting from that point, slice upward and inward to form the bridge of the nose. Don't pay too much attention to the height of the forehead; most Little Guys don't have one. Just slope the bridge of the nose right up to the top of the head.

Next, make a stop cut just beneath the mark. Cut away the area beneath the nose to a depth of about ¼". Be careful not to break off the nose at this stage. Slice a bevel at the bottom of the head to form the lower lip and chin. Now, your carving should resemble the one shown in step 1.

Draw the side of the nose and the eyebrows where shown in step 2. Stop-cut the lines. Then, carefully carve out shallow chips with the tip of your blade to form the sides of the nose and the eye sockets. Cut about ⅛" deep, sloping in near the side of the nose, shown in step 3.

Don't scrimp on the nose

Next, shape the nose. And don't aim for a dainty, well-proportioned one; give the guy a real honker. Round over the sides a little at a time. You'll find that a small chip makes a big difference at this stage (step 4).

A bulbous end on the nose will give your Little Guy an entirely different personality than a pointed one. You'll create a much different look if you carve the bridge of the nose slightly concave instead of convex, too.

Starting at the lower outside edge of the nose on each side, draw the smile lines downward and outward, where shown in step 5. Stop-cut each line, and then round over the mouth area.

Pencil in the biggest mouth that will fit, following the general shape of the one shown in step 5. Leave ⅛" above and below the mouth for an upper lip and chin.

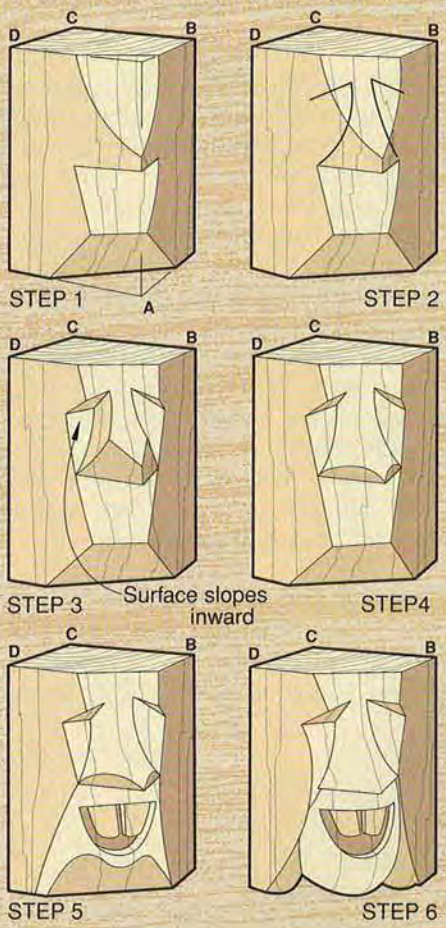
Stop-cut the mouth about 1/16" deep, and cut away the inside of the mouth with the tip of your knife. (Keith switches to a smaller X-acto #16 blade at this point.) Draw in two, three, or four upper teeth, and stop-cut them. Model the teeth with shallow V-cuts, and shave the surface down slightly so the teeth will appear to be farther inside the mouth at the top, but flaring out. Deepen the mouth opening around the teeth.

About 1/16" below the mouth, slice downward toward the chin to form the lower lip. Don't make it too deep; just enough to let the mouth stand out from the chin. Then, round the chin and jaw into the neck (step 6).

Sketch a 3/16" circle on each side of the head, about in the middle. These will be ears. Stop-cut and carve to set them out about ⅛". Then cautiously carve a slight hollow in the center. (You also could use a spherical bit in a hand-held rotary tool.)

CARVING THE FACE

Note: Square corners shown for orientation



Before you tackle final detailing, give the carving a once-over. Round over the arm, smooth any rough or fuzzy areas, and stop-cut the bottoms of V-cuts to clean and define them. From an arm's length, check for symmetry.

Draw fingers on the hand, and carve them with the tip of a sharp knife. They'll be wrapped around a carving knife, so keep them short. Then, whittle the other hand and arm from stock about ⅛ × ¾ × 3", following the full-sized drawings on *page 71*.

Add your special touches

Detail the Little Guy's clothing with shallow stop-cuts and V-cuts. Add a belt, cuffs, pockets, shoe soles, shirt collar, necktie—whatever you'd like your little woodcarver to wear. Whittle a miniature carving, such as the little Little Guy our Little Guy's holding or the duck on *page 71*.

Draw a vertical line on the Little Guy's left side, running approximately from his ear to his shoe heel. Hold the arm in position, and move it around until it looks right.

When you determine the proper position for the arm (ours angles down slightly), draw a line on the arm to match up with the line on the body. File or sand tight mating surfaces on the body and arm, and join them with woodworker's glue. When dry, carve away the excess length and blend the arm into the shoulder.

Woodburn lines for the hair and eyebrows. Add sideburns or a mustache, if you like. V-cuts or shallow, closely spaced knife cuts also represent hair well.

Paint the Little Guy with acrylic artist colors. For his eyes, paint a white oval in each eye area. Put a blue or brown dot in each, and then dab on a white highlight. Dress your Little Guy in colors you like. Finally, glue the carving to the left hand and a silver-painted toothpick end to the right hand to represent a knife.

Project Design: ©Keith Randich Photograph: Wm. Hopkins Illustrations: Mike Henry Written by Larry Johnston

Full-Size Professional Plan

ADIRONDACK CHAIR

Make this classic American design. Our special version may be folded for storage by using ordinary hardware available at your local store. Be ready for Summer and get your plan now!

Plan #700 . . . . . $14.00
(catalog free with order)

CATALOG 200 full-size professional furniture plans — $3.00

VISA MasterCard

FURNITURE DESIGNS, INC., Dept. BA-93
1827 Elmdale Ave., Glenview, IL 60025
(708) 657-7526

WOODHAVEN

* ROUTER TABLES *
* ACCESSORIES *
* TEACHING VIDEOS *
* ROUTER BITS *

Free Catalog
5323 W. Kimberly Road
Davenport, IA 52806
1-800-344-6657

QUALITY TOOLS

for Woodworking & Laminating

- Virutex® Joiner & Biscuits (Rated Top Notch, Dec. '92 WOOD® Mag.)
- Carbide Bits & Cutters
- Slitters & Planers
- And many other Products

Catalog $1.00

Practical Products Co.
3925 Virginia Ave.
Cincinnati, Ohio 45227
Tel: 513/561-6560

RESTORE FURNITURE for SECURE INCOME

Perfect 2nd Career

Make $200-$2,000 a day! Unlimited market; turn-key business. Free workshops. **Set-Up Shop for $2,999-$9,999!** Part-time or full-time. **Great for men, women, families.**

Make Molds*Veneer*Resilver Strip*Repair*Refinish

Business Preview Video $8.95 - Catalog $2.00

MINUTEMAN, INC., Ste. 17
Box 8, Waterloo, WI 53594
1-800-733-1776

WARREN'S FINEST COMBINATION WHITTLERS/CARVERS KIT IN CUSTOM REDWOOD BOX

Introducing New concept
'Lock-Jaw' handles with 'Lock-Jaw' wrench

1993 WOOD SHOP SPECIAL
#COMBI-TCE
$95.95
P.Pd. (USA)

Designed for wood-carvers who appreciate fine quality tools. (Made in USA) Est. 1927.
Plus Free Pattern and Instruction Booklet.

COMBI-TCE CONTENTS:
(8) Gouges*
(6) Small Blades*
(1) Large Blade*
* All Honed Sharp
(2) Handles (Interchangeable)
New concept
(1) ea. Walnut (Palm), and Rosewood
(2) Sharpening Blocks
(1) ea. Abrasive, and Leather

1993 Warren Woodcarving Tool & Supply Catalog FREE WITH ORDER. Catalog only, send $1.00
*N.Y. State Residents Add State Tax. Shipping Also Taxable

Send Check or Money Order to:
Warren Tool Co., Inc.
2209-1 Rt. 9G,
Rhinebeck, NY 12572
Tel. (914) 876-7817 • USA only • COD UPS Available
Canada and Foreign Please send Money Order U.S. Funds. Canada Add $3.00. Foreign Orders Add $6.50 shipping fee.

ALPHABETS FOR WOOD SIGNS

Abc Abc Abc Abc Abc Abc Abc
The Smith's Bob's Bait Shop

TIP ON HOW TO ALIGN YOUR LETTERS STRAIGHT FOR ROUTING, CARVING OR SCROLL-SAWING.

SET OF 3 DIFFERENT ALPHABETS
additional sets available

••• *FREE* •••
SURPRISE BONUS PACKAGE

SEND $15.95 plus $4.00 shipping & handling to

ABC PLANS
2002 College Street
Cedar Falls, IA 50613

WOOD PATTERNS

550 ORIGINAL DESIGNS FOR ONLY $6.95

You will cherish for life the joy of making these great, easy-to-do woodworking patterns. Working with your hands, and putting the finishing touches on something that's exquisite to look at, has its own just reward.

The Enjoyable Weekend Craftsman has carefully selected over 550 of your favorite woodworking designs. These all new original designs were exclusively commissioned for us by the renowned Craftsman Michael Stewart. His illustrated easy-to-follow, step-by-step instructions include full-size plans.

Similar to patterns SEEN ON TV

1¢ PER PATTERN
why pay over $100.00 for 100 patterns?

Do it for fun or profit!

Also makes a great gift!

• Adorable Children's Toys – Circus Toys, Mermaids, Bears, Clowns, Rockers, Play Things, Trains, Ceiling Hangers, Dinosaurs • Wall Shelves • Welcome Signs • Yard Ornaments • Door Stops • Weather Vanes • Flower Pots • Attractive Holiday & Birthday Ideas • Charming Kitchen Paper Towel Holder, Napkin Holder, Spice Rack • Window Sill Decorations • Tool Holders • Plaques of all Kinds • Sports Patterns • Loveable Animals Great and Small • Organizers • Tables, Chairs • TV Trays • Fun Lamps • Country Styles and More

Deer Creek Products, Inc., Dept. M344
3038 N.W. 25th Ave., Pompano Bch., FL 33069

30 Day Money Back Guarantee.

☐ The Enjoyable Weekend Craftsman – over 550 woodworking projects only $6.95 plus $2.50 shipping

☐ Two complete sets only $11.95 plus $3.50 shipping

Name _____

Address _____

City _____

State _____ Zip _____

CUT OUT COUPON

It's Fast & Easy!

RUST REMOVAL MADE EASY

A TOOL COLLECTOR SHARES HIS LABOR OF LOVE

As a professor of archaeology, and an active tool collector, Missourian Jim Price sometimes manages to apply academic skills to his hobby—like removing rust with electrolysis. "For decades, archaeologists have employed the method to clean specimens without damage," says Jim. (Read more about Jim Price in "He Makes Tools Sing Again" on *pages 25–29.*)

Charging up for rust

According to Jim, his rust-removal technique depends on producing a chemical change (removing rust) by passing an electric current through a nonmetallic conductor. To translate that into application, you'll need a common battery charger (about $20 at auto-supply stores) to supply the direct current. Then—for the conductor—mix a can of lye (about $2 for 12 oz. at grocery stores) to three gallons of cold water.

For the terminals—the negative cathode and the positive anode—of the electrolytic cell you're creating, use ferrous (derived from iron) metal rods, such as concrete-reinforcing rod. The container must be made of plastic or glass. Gather up some flexible iron wire, a scrap board long enough to rest on the container, and you're ready to start.

Zap away corrosion

Jim recommends operating your rust remover outdoors. "Not because the fumes are toxic," he says, "but because they really smell bad." And be sure that the tool(s) you're going to clean do not have a zinc plating or brass parts. Zinc will dissipate through the solution and cover everything, and brass gets discolored. Also, remove wooden parts.

To support the metal terminals in the bucket, drill two holes in the board the same diameter as the terminals, one near each end. Then insert the terminals.

With a wrap of wire, attach the rusted tool or parts of a tool to the bottom of the terminal you designate as negative. Next, place the terminals and attachments into the bucket containing the lye/water mixture.

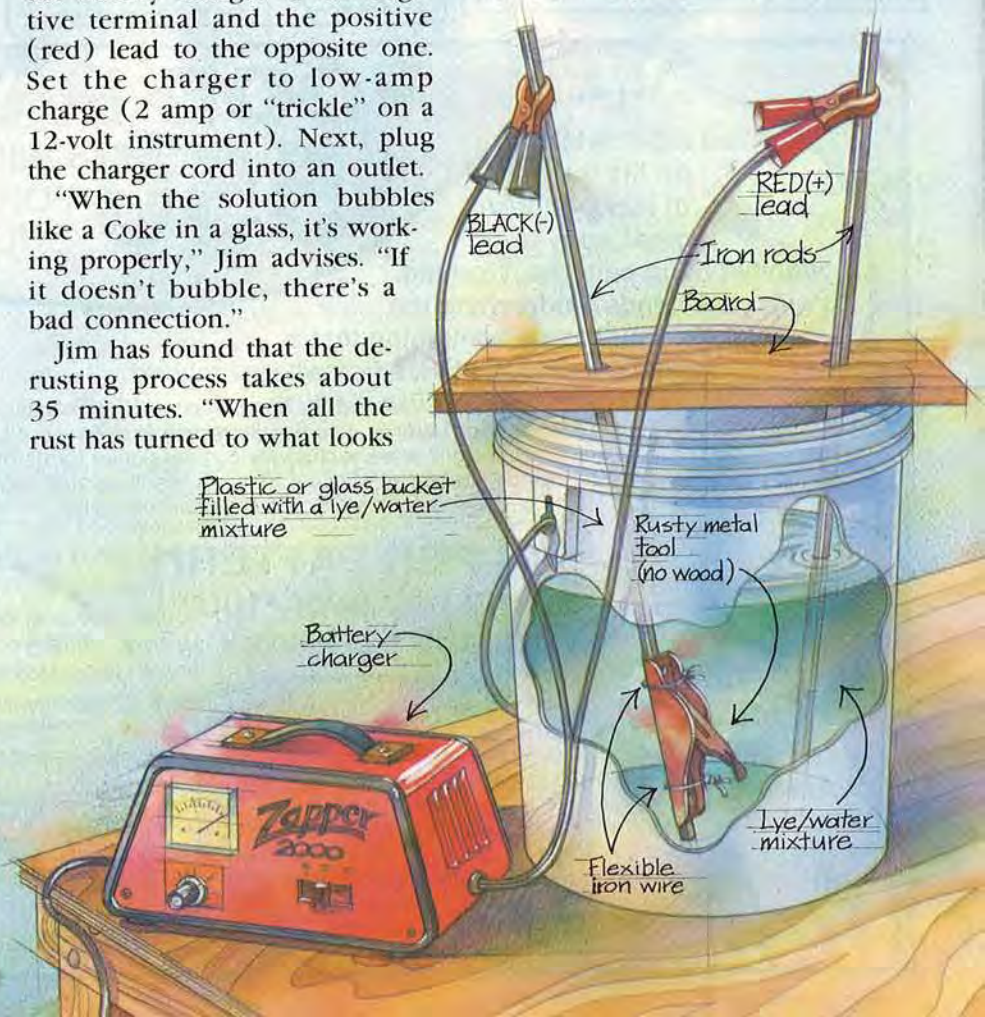
Start the process by connecting the negative (black) lead of the battery charger to the negative terminal and the positive (red) lead to the opposite one. Set the charger to low-amp charge (2 amp or "trickle" on a 12-volt instrument). Next, plug the charger cord into an outlet.

"When the solution bubbles like a Coke in a glass, it's working properly," Jim advises. "If it doesn't bubble, there's a bad connection."

Jim has found that the derusting process takes about 35 minutes. "When all the rust has turned to what looks like a black powder, it's done," he notes.

After stopping the electric flow and removing the charger leads, Jim pulls the still-attached tool from the solution and rinses it quickly with a garden hose (gloves keep the weak but caustic solution off his hands). "Then, rinse it real good with boiling water," he says. "You also can wire-brush the metal very lightly. If there are any stains left on the metal where the rust was, remove them with a buffing wheel and jewelers rouge. Then, rub with oil."

Illustration: Brian Jensen



Print this article

CAPTURE THE SPIRIT

Dynamic jewelry for today's man- in 24 kt gold and sterling silver.

He reaches for the top. Striving to be the best. Taking chances - and winning!

Now, capture the spirit of today's man in a boldly dramatic new ring by the artists of Keepsake. Richly sculptured with a portrait of the American Eagle- symbol of pride, strength and independence.

Each ring is meticulously detailed and very skillfully handcrafted in a striking combination of pure 24 karat gold on solid sterling silver. For today's ventures–and tomorrow's triumphs. Just $125. Available only from Keepsake, master American jewelers since 1892.

Keepsake®

Keepsake®
P.O. Box 1495, Newtown, PA 18940

Please Mail by September 30, 1993

Yes, send me *The Golden Eagle Ring* in 24 karat gold on solid sterling silver. I need send no money now. Bill me in five monthly installments of $25.* each, with the first payment due prior to shipment. A custom ring sizer will be sent before shipment to assure my correct fit. And *my satisfaction is completely guaranteed.*

*Plus $3.95 per ring for shipping and handling, and applicable sales tax.

Name _____
PLEASE PRINT

Address _____

City _____ State ___ Zip _____

2241

THE GOLDEN EAGLE RING

BUYING A BASIC COMMONSENSE TOOL KIT

Print this article

Perhaps you've just completed a beginning woodworking course, or maybe you've assembled your first kit project. You thoroughly enjoyed this taste of woodworking, and now you're ready for bigger challenges. But one obstacle blocks your way: you don't own the proper tools.

What tools does a beginning woodworker need, and how should he or she acquire them? In an unscientific poll of *WOOD*® magazine staff members, we assembled a basic tool kit for woodworkers, tools we think should be part of any shop.

With this equipment—and skill—you can perform most woodworking operations.

As you read the list, you'll notice we don't mention stationary power tools—the tablesaws, drill presses, bandsaws, and jointers that professional woodworkers and serious amateurs depend on. We left them out because this is a basic tool kit.

When assembling our kit, we kept the beginning woodworker in mind. All of us would have liked to have included a tablesaw in the package, but we omitted it for economy.

Even without the tablesaw, if you walk into your local tool shop and ask for everything on our list, the clerk might ask you to turn over $1,000 or more. How can you get a start in this hobby without robbing a bank? We believe the answer is to plan carefully and buy wisely.

Plan Ahead

Equip your shop a few tools at a time. As your skills improve, so will your tool inventory. In the basic kit on the *opposite page*, we list the tools that we find indispensable in bold-face type. They're the items you're likely to find most useful and use most often, so think about purchasing them first.

Can you sidestep any processes for which you're not well equipped? Some retail wood outlets will joint, rip, plane, and crosscut lumber to requested dimensions. You pay for this service, of course, but in the short run it's less expensive than buying tools you'd need to do the work yourself.

As you budget each project, try to figure in the purchase of one new and necessary tool. You'll spread out the cost of equipping your shop, and you'll be able to enjoy a new tool with each project you undertake.

Finally, remember that there are woodworkers who make exceptional pieces with only hand tools (and a little perspiration). We are addicted to the power tools in our shop, but we know that life can go on without them.

Be a Smart Tool Shopper

When you're ready to buy tools, shop carefully. Check more than one store, read all the catalogs you can obtain (the information in them will save you substantially more than the few dollars they may cost), and always look for sales and specials. Don't rush yourself.

Mail-order advertisements in magazines such as *WOOD* regularly offer substantial price reductions on top-quality tools. And tool sales are such a normal marketing practice at several nationwide retail chains that it sometimes seems difficult to pay full retail price.

Many manufacturers offer at least two product lines: inexpensive tools for "hobbyists," and more elaborate heavy-duty models for commercial and professional use. Which type do you need?

In general, it makes sense to buy the best equipment you can afford, particularly when you're purchasing hand tools. It's unlikely that a good saw or plane will become obsolete, and with basic maintenance, there's no reason why these tools can't last a lifetime. The thought that a greatgrandchild might one day enjoy using your combination square could make spending extra dollars seem like a wise investment.

When it comes to power tools, however, it gets easier to fall into the "overkill" trap. If a 1-hp router will be entirely adequate for your needs, don't buy a 3-hp model.

Good tools don't go out of style. A 100-year-old hand plane or wood chisel looks pretty much the same as a brand-new one, and some woodworkers insist that the older the tool, the higher the quality. In fact, some classic models of old tools can actually be more expensive than new models. But auctions and newspaper classifieds are often good sources for low-cost, high-quality items, so think about buying your tools used. You might even find a great deal on that tablesaw we'd so much like you to have.

Photograph: Bob Calmer Illustrations: Jim Stevenson

Measuring tools:

- **Combination square**
- Sliding bevel
- Marking gauge
- Framing square
- **Steel tape (10′ or 12′)**
- Folding rule
- **Compass**
- Scratch awl

Cutting tools:

- **Crosscut saw (12 pt.)**
- Rip saw (6½ or 7½ pt.)
- **Backsaw or dovetail saw (15 tpi)**
- Coping saw
- Hacksaw
- Slip-joint pliers
- Needlenose pliers
- Diagonal cutters

Shaping tools:

- Smooth plane
- Low-angle block plane
- **Wood chisels (¼″, ½″, ¾″, 1″)**
- Single-cut mill bastard file
- Round rasp
- Flat rasp
- **Cabinet scraper and hand scrapers**
- Utility knife

Joining tools:

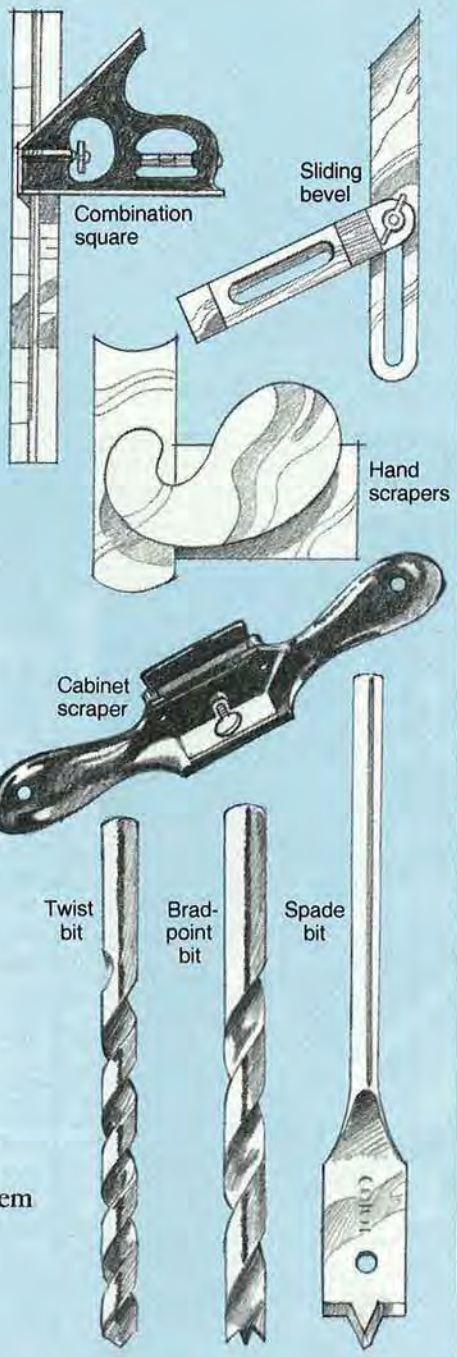
- **Claw hammer (16 oz.)**
- Finish hammer (8 oz.)
- **Nail set**
- Wooden mallet
- **Screwdrivers (straight, Phillips)**
- Doweling jig
- Bench vise or clamping system
- **Bar or pipe clamps (2-3′ and 2-5′ min.)**
- Handscrews
- **C-clamps**

Safety and maintenance:

- **Face shield or safety glasses**
- **Hearing protector**
- **Dust mask or respirator**
- **Sharpening stone (dual-purpose, coarse/fine)**

Portable power tools:

- Router (1 hp, ¼″ collet) (Purchase bits as needed; bead, chamfer, cove, straight, round-over, rabbet)
- Circular saw (7¼″)
- **Drill (⅜″ variable speed)**
- **Twist drills (1/16″-⅜″)**
- Spade-shaped drill bits
- Brad-point drill bits
- Jigsaw
- **Dual-action pad sander (straight-line & orbital)**
- **Belt sander (3″ × 21″ with dust collection)**



RIP SAW
The Portable Sawmill.
The "affordable portable" one man band sawmill. Weighs only 45 lbs. Cuts 20" diameter logs into lumber. Minimum 1/8" to maximum 9" thickness.
Write or call for free brochure.
Videos also available.
Better Built CORPORATION
(508) 657-5636
845 Woburn Street, Dept. W, Wilmington, MA 01887

Constantine's 1993
WOODWORKER'S CATALOG
Over 4000 products to BUILD, REPAIR, RESTORE, REFINISH anything made of wood!
2 year subscription Only $1.00
It's the catalog woodworkers rely on–116 pages jam-packed with fine woods, veneers, tools, finishing supplies, and much more–all top quality, all reasonably priced, all with our 60-day no-questions-asked guarantee. For your 2-year subscription send $1.00 to:
CONSTANTINE
Serving Woodworkers for 181 years
2050 Eastchester Rd., Dpt. 35309, Bronx NY 10461

Classic Heirloom Cradle
Two Cradle Plans
One for Babies
One for Dolls
You can easily build this classic cradle which will become a cherished family heirloom to pass from generation to generation. Two sizes available... Baby or Doll.
Full Size Plans
Baby size Plan (21 x 35) $14.95 ppd.
Doll size Plan (10 x 18) $8.95 ppd.
Spindles available in Oak or Maple. See our catalog which is sent free with your order.
M/C VISA orders call toll-free 1-800-292-8296
ARMOR Box 445 A, East Northport, NY 11731

INTERESTED IN WOODTURNING?
Join the American Association of Woodturners!
- Quarterly Journal-*American Woodturner*
- National Symposiums
- 55 Local chapters

call or write:
AAW - Dept. W
667 Harriet Ave.
Shoreview, MN 55126
612/484-9094

One Stop Wood Shop

Domestic and exotic hardwood plywood and lumber, marine plywood, over 30 species in stock- all under one roof.
Custom cutting services to your exact specifications with little or no waste at competitive prices!
We specialize in bundling and shipping.

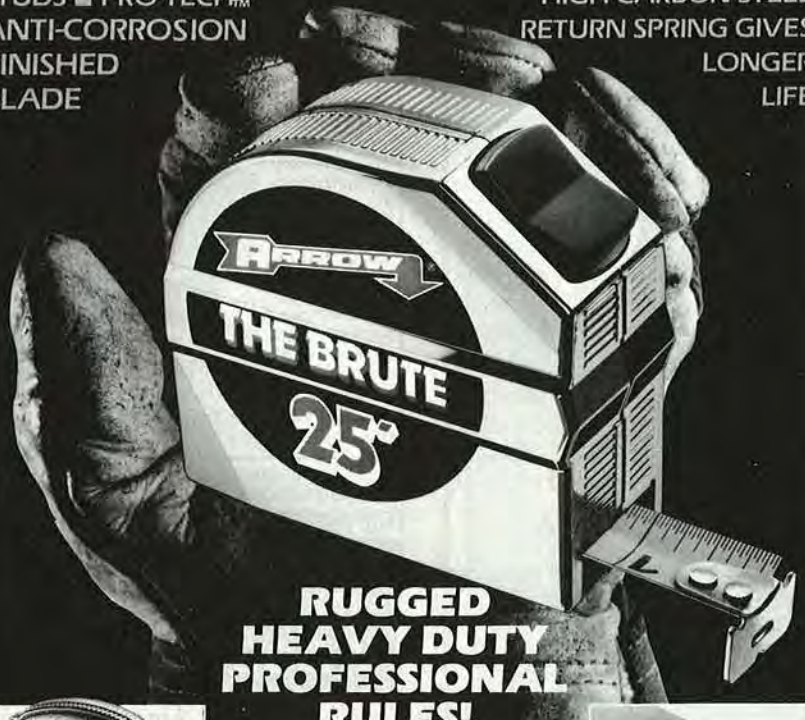
Call (617) 666-1340 today for catalog and quote.

Boulter Plywood Corp.
24-WD Broadway, Somerville, MA 02145

■ TRIPLE BRIGHT RUGGED CHROME HOUSING ■ CONTOURED COMFORTABLE DESIGN ■ POSITIVE EASY TO USE THUMB LOCK ■ EASY TO READ DUAL MARKINGS FOR LOCATING STUDS ■ PRO-TECH™ ANTI-CORROSION FINISHED BLADE

ARROW® presents... THE BRUTE™

■ TEMPERED STEEL BLADE REMAINS RIGID FOR APPROXIMATELY 7 FEET ■ TRIPLE REINFORCED NON-SLIP END HOOK ■ CALIBRATED FOR TRUE ZERO ■ HEAT TREATED HIGH CARBON STEEL RETURN SPRING GIVES LONGER LIFE



RUGGED HEAVY DUTY PROFESSIONAL RULES!

THE BRUTE™ STEEL RULE AVAILABLE IN: 50' AND 100' SIZES.

AVAILABLE IN SIZES OF:

12'	16'	25'	30'	50'	100'

AND A MUST SEE 25' NEON GREEN

Available at Kmart and other leading stores everywhere.

ONLY ARROW HAS THE EXCLUSIVE NON-SLIP END HOOK

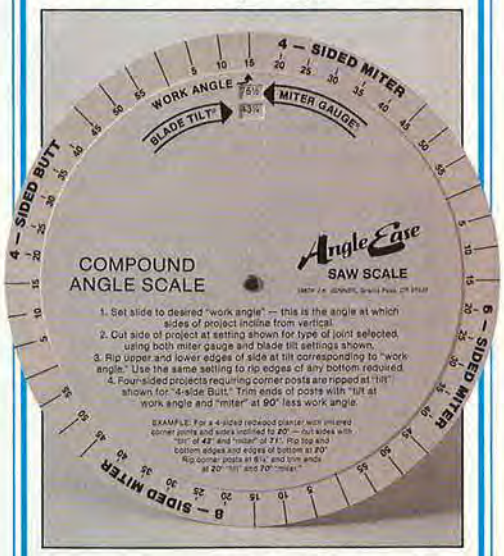
ARROW FASTENER COMPANY, INC. 271 MAYHILL STREET, SADDLE BROOK, NEW JERSEY 07662
IN UNITED KINGDOM: ARROW FASTENER (U.K.) LTD., 14 BARCLAY ROAD, CROYDON CR0 1JN UNITED KINGDOM
IN CANADA: JARDEL DISTRIBUTORS, INC., 6505 METROPOLITAN BLVD. EAST, MONTREAL H1P 1X9 QUEBEC

Print this article

SHOP TESTED

PRODUCTS THAT PERFORM

Simple scale makes easy work of tricky angle cuts



If you occasionally design your own projects with compound angles or multiple sides, I've come across a handy scale that you should know about. The Angle Ease Saw Scale works like a circular slide rule. One side has a compound-angle scale for determining the saw settings for 4-, 6-, or 8-sided miters, or 4-sided butt joints. You only need to adjust the scale to the angle at which your workpieces incline from vertical (from 5° to 55°), and the scale tells you the necessary miter-gauge and blade-tilt settings.

The other side of the scale helps you calculate tool settings for multisided assemblies such as an 8-sided top on a picnic table. To use it, you first dial in the number of sides from 3 to 20. The scale tells you the necessary blade-tilt and miter-gauge setting. Two other windows in the scale give you a decimal factor for calculating the length of your workpieces.

I found the Angle Ease accurate and surprisingly simple to use. Its paperboard construction should survive most workshop settings.

Tested by Bob McFarlin

Angle Ease Saw Scale, $9.95 ppd. from J.K. Jenner, 2294 Stringer Gap Road, Grants Pass, OR 97527.

Continued on page 80

PORTER+CABLE

ROUTER BITS ARE 35% OFF OF LIST PRICES!

100	7/8 HP ROUTER	599
102	DOOR HANGING KIT	328
314	4 1/2" TRIM SAW	135
315-1	7 1/4" BUILDERS SAW	116
345	SAW BOSS 6" CIRCULAR SAW	104
330	SPEED BLOCK FIN SANDR $57 AFT. RBT	47
332	QUIKSAND 5" RNDM ORB W/STIKIT PAD	63
333	QUIKSAND W/HOOK & LOOP, DUSTLS	73
334	QUIKSAND W/STIKIT, DUSTLESS	73
351	3" X 21" BELT SANDER	140
352	3" X 21" BELT SANDER W/DUST BAG	142
352VS	3" X 21" VS BELT SANDR W/DUST BAG	158
360	3" X 24" BELT SANDER W/DUST BAG	182
361	3" X 24" BELT SANDER	177
362	4" X 24" BELT SANDER W/DUST BAG	188
363	4" X 24" BELT SANDER	183
368-1	8 1/4" BUILDERS SAW	141
503	3" X 24" BELT SNDR W/BAG, X HVY DTY	345
504	3" X 24" BELT SNDR XTRA HEAVY DTY	335
505	1/2 SHT FIN SANDER	118
548	BAYONET SAW WORM DRIVE	194
550	*NEW POCKET CUTTER*	178
556	BISC JOINER W/CASE & TILT FENCE	177
617	7 1/4" BUILDERS SAW	119
690	1 1/2 HP ROUTER W/1/4" & 1/2" COLLETS	130
691	1 1/2 HP "D" HANDLE ROUTER	143
692	TRU-MATCH JOINING ROUTER	213
693	PLUNGE BASE ROUTER, 1 1/2 HP	164
695	SHAPER TABLE W/ 1 1/2 HP ROUTER	204
696	SHAPER TABLE	123
2620	3/8" VSR DRILL, 0-1200 RPM W/CHK	99
2621	3/8" VSR DRILL, 0-1200 RPM KEYLESS	99
2640	DRYWALL VSR DRVR, 4.5 A, 0-4000 RPM	79
5008	DOVETAIL TEMPLATE	76
5009	MORTISE & TENON JIG	44
5116	OMNI JIG	254
5556	BISCUIT JOINER TILT FENCE	45
6615	SAME AS ABOVE BUT W/ KYLS CHUCK	123
6931	PLUNGE ROUTER BASE	74
7116	*NEW 24" OMNIJIG*	295
7310	LAMINATE TRIMMER, 5.6 AMP	88
7312	OFFSET TRIMMER	122
7319	TILT BASE TRIMMER	99
7335	5" RANDOM ORBIT SANDER, VS	126
7336	6" RANDOM ORBIT SANDER, VS	132
73333	RANDOM ORBIT DUST EXTRACTION	24
7349	BAYONET SAW	115
7518	3 1/4 HP FIXED BASE ROUTER-5 SPEED	259
7519	3 1/4 HP FIXED BASE ROUTER-1 SP	224
7536	2 1/2 HP FIXED BASE ROUTER	195
7537	2 1/2 HP FIXED BASE "D" HNDL RTR	205
7538	3 1/4 HP PLUNGE ROUTER-1 SPEED	224
7539	3 1/4 HP PLUNGE ROUTER-5 SPEED	259
7549	TOP HANDLE BAYONET SAW	143
7649	BARREL GRIP BAYONET SAW	143
7700	*NEW 10" LASERLOC MITER SAW*	338
9118	PORTA PLANE KIT W/CASE, CRBD BLD	199
9314	4 1/2" TRIM SAW KIT	148
9315	7 1/4" BUILDERS SAW KIT	138
9345	SAW BOSS 6" CIRCULAR SAW KIT	123
9367	3 1/4" PLANER KIT	144
9548	WORM GEAR BAYONET SAW KIT	210
9617	7 1/4" BUILDERS SAW KIT	138
9637	TIGER SAW VAR SPD RECIP SAW KIT	139
9840	CRDLS DRILL KIT W/2 BAT, CS KYLS CK	158
9841	CRDLS DRILL KIT W/15 MIN CHRG, KYLS	169
9847	TIGER CUB RECIP SAW KIT	115
9853	12 V, 3/8" CRDLS KIT, VS KEYLESS CHK	148
9853S	SAME AS ABOVE BUT W/2 BATTERIES!	174
9854	12 V, 1/2" CRDLS KIT, VS W/GEARED CK	159
97310	LAMNT TRIMMR KIT W/4 BASES & CS	189
97751	1/2" VS, 2 SPD HAMMER DRILL KIT	145

PORTER+CABLE

BUY YOUR TOOL IN KIT FORM & SAVE $$$

690K	1 1/2 HP ROUTR W/CASE, EDGE GUIDE, TEMPLATE GUIDE KIT	169
9690	1 1/2 HP ROUTER W/STEEL CASE	139
556K	BIS JOINR W/TILT FNC, 1000 BISCTS & CS	199
332K	5" QUIKSD PSA PAD 100 SHTS PPR & CS	89
333K	5" QUIKSAND, VELCRO PAD, 25 SHEETS PAPER, CASE	99
334K	5" QUIKSAND, PSA HOLED PAD, 100 SHEETS PAPER, CASE	99
330K	1/4 SHEET SANDER W/CASE & 10 YDS PSA PAPER, AFTER REBATE	74
7335K	5" VS RANDOM ORBIT SNDR W/CASE & 100 SHEETS OF PAPER	164
7336K	6" VS RANDOM ORBIT SNDR W/CASE & 100 SHEETS OF PAPER	168
7700K	10" MITER SAW W/DUST BAG, EXT WINGS & 40T BLADE	379

BOSCH

ALL BOSCH ROUTER BITS ARE 40% OFF OF LIST PRICES!

1194VSR	1/2" VSR, 2 STAGE HAMMER DRILL	$144
1195VSR	3/8" VAR SPEED REV HAMMER DRILL	129
1581VS	TOP HANDLE JIG SAW, VS	144
1581DVS	SAME AS ABOVE BUT DUSTLESS	169
1582VSC	CLIC BARREL HANDLE JIG SAW, VS	144
1582DVS	SAME AS ABOVE BUT DUSTLESS	169
1272D	3" X 24" DUSTLESS BELT SANDER	179
1273D	4" X 24" DUSTLESS BELT SANDER	188
1273DVS	4" X 24" VS DUSTLSS BELT SANDER	199
1347AK	4 1/2" MINI GRINDER W/CASE	105
1370DEVSK	6" VS DSTLS RNDM ORB SNDR KIT	259
1420VSR	DRYWALL DRIVER, 4.8 A, 0-4000 RPM	84
1600	2 1/4 HP "D" HANDLE ROUTER	258
1601	1 HP ROUTER	109
1602	1 1/2 HP HANDLE ROUTER	134
1603	1 1/2 HP "D" HANDLE ROUTER	142
1604	1 3/4 HP ROUTER	134
1608	LAMINATE TRIMMER	84
1608U	UNDERSCRIBE TRIMMER	117
1609K	INSTALLERS KIT WITH 3 BASES	174
1609KX	DELUXE INSTALLERS KIT W/4 BASES	197
1613	1 3/4 HP PLUNGE ROUTER	163
1613EVS	2 HP VAR SP PLUNGE ROUTER	183
1614	1 HP PLUNGE ROUTER	127
1614EVS	1 1/4 HP VAR SP PLUNGE ROUTER	148
1615EVS	3 1/4 HP VAR SP PLUNGE ROUTER	245
1654	7 1/4" CIRCULAR SAW	99
3050VSRK	9.6 V, VSR CRDLS DRILL W/2 BAT, CS	134
3258	3 1/4" PLANER	136
3282DVS	5" VS DUSTLESS RANDOM ORBIT	98
11203	1 1/2" ROTARY HAMMER W/STOP ROT	429
11304	THE BRUTE BREAKER HAMMER	1195
11305	DEMOLITION HAMMER	539

SUPER SPECIAL!

636 OSCILLATING TRIANGULAR SANDER $189
INCLUDES CASE & PAPER ASSORTMENT

QUICK-GRIP BAR CLAMPS

00506	6" BAR CLAMP	14
00512	12" BAR CLAMP	17
00518	18" BAR CLAMP	18
00524	24" BAR CLAMP	19
00536	36" BAR CLAMP	23
05462	2 PC 6" BAR CLAMP GIFT PACK	23

Jorgensen

ITEM	JAW LENGTH	OPEN CAP	OUR PRICE EACH	BOX OF 6
ADJUSTABLE HANDSCREWS				
#0	8"	4 1/2"	11.85	60.90
#1	10"	6"	12.85	70.60
#2	12"	8 1/2"	14.95	80.90
#3	14"	10"	16.95	104.90
#4	16"	12"	24.95	143.90
STYLE 37 2 1/2" THROAT 1 1/4" x 3 1/4"				
3706		6"	6.20	34.50
3712		12"	6.70	37.50
3718		18"	7.20	40.50
3724		24"	8.20	43.50
3730		30"	9.10	49.50
3736		36"	10.20	55.50
PONY CLAMP FIXTURES				
#50	3/4" BLACK PIPE CLAMPS			7.85
		BOX OF 12		84.90
#52	1/2" BLACK PIPE CLAMPS			6.50
		BOX OF 12		69.50

PORTER+CABLE

QUIKSAND

RANDOM ORBIT SANDER MODEL 332K

Includes 100 sheets of paper, Stikit pad, & case

OUR PRICE $89.00

MODEL 334K - Same as above but w/dust cannister & perforated paper - $99.00

Emglo

AIRMATE MODEL AM78-HC4V

1 1/2 hp, 125 psi portable air compressor

OUR PRICE $299.00

freud

MODEL FT2000E

3 1/4 HP Variable Speed Plunge Router

OUR PRICE $205.00

LESS $30 REBATE

- FINAL COST $175.00

PORTER+CABLE

MODEL 690K

1 1/2 HP ROUTER

Includes TEMPLATE GUIDE KIT, EDGE GUIDE & CARRYING CASE

OUR PRICE $169.00

DELTA SPECIAL EDITION 10" 3 HP UNISAW MODEL 36-820 WITH 52" UNIFENCE SAW GUIDE $1499

PLUS $50 SHIPPING ANYWHERE IN THE CONTIGUOUS UNITED STATES - HURRY! LIMITED TIME OFFER

freud

BISCUIT JOINER MODEL JS100K

Includes biscuit joiner, case & 1000 assorted biscuits

OUR PRICE $188.00 - LESS $30 REBATE - **FINAL COST $158.00**

PORTER+CABLE

BISCUIT JOINER KIT MODEL 556K

Includes FENCE, TILT FENCE, CARRYING CASE & 1000 ASSORTED BISCUITS

OUR PRICE $199.00

senco

MODEL SFN1 PINNER

WILL SHOOT A FINISH NAIL 1" TO 2" LONG - OILESS

INCLUDES CASE

OUR PRICE $239.00

PORTER+CABLE

1/4 SHEET FINISHING SANDER MODEL 330

$57.00

AFTER $10 REBATE $47.00!

senco

SLP20	*NEW PINNER, 5/8" - 1 5/8" CAP W/CS*	245
SCN200R	ROOFING NAILER	379
SN4	FRAMING NAILER-6 TO 16 PENNY	467
SN325	FRAMING NAILER-6 TO 12 PENNY	379
SFN1-2	FINISH NAILER-1" TO 2" CAPACITY	239
SFN2B	FINISH NAILER-1 1/2" TO 2 1/2" CAP	299
SKS	FINISH STAPLER-5/8" TO 1 1/2" CAP	199

DELTA

31-080	1" BELT/5" DISC SANDER	93
31-280	6" BELT/12" DISC SANDER, 1 1/2 HP	749
31-460	4" BELT/6" DISC SANDER	129
40-560	16" SCROLL SAW, 2 SPEED	183
22-540	12" BENCH TOP PLANER	396
28-180	BENCH TOP BAND SAW	167
33-060	NEW SIDEKICK 6 1/2" FRAME & TRIM SAW	379
37-070	*NEW* 6" VS BENCH JOINTER	249
50-075	DUST COLLECTOR SWEEPER, 3/4 HP	249
50-175	*NEW* KICKSTAND PRTBL WORK STAND	169

HITACHI

M12V	3 HP VAR SPEED PLUNGE ROUTER	226
TR12	3 HP PLUNGE ROUTER	179
C12FA	12" DELUXE MITER SAW	318
CJ65V2	TOP HANDLE JIG SAW W/CASE	156
F30A	3 5/8" PLANER, 8.3 AMP	179
M8V	VAR SPEED PLUNGE ROUTER, 1/4"	154
P12R	12" PORTABLE PLANER	799
P12RA	12" PORTABLE PLANER / 6" JOINER	999
P20SB	3 1/4" PLANER, 3.4 AMP	92
TR6	LAMINATE TRIMMER	92
TR12	3 HP PLUNGE ROUTER	179
SB75	3"x21", 2 SPEED BELT SANDER	136
SB8T	3"x24", 2 SPEED BELT SANDER	150
SB10T	4"x24", 2 SPEED BELT SANDER	166
SV12SA	4 3/8" PALM GRIP SANDER	46
SV12SD	4 1/2" ORBITAL SANDER W/DUST BAG	188
SV12V	4 1/2" ORBITAL W/BAG, VAR SPEED	144
D10DFKBE	9.6V, CRDLS DRILL KIT W/2BAT & CS-KYLS	149

freud

FREUD ROUTER BITS ARE 40% OFF OF LIST PRICES!

JS100	BISCUIT JOINER ($164) AFTER REBATE	134
FT2000E	3 1/4 hp PLNG RTR VS ($205) AFTER REB	175
FRT2000	ROUTER TABLE - WOOD	169
EB100	EDGE BANDING SYSTEM	214
LM72M010	10" X 24T FLAT TOP RIP BLADE	36
LU84M010	10" X 50T ATB COMBO BLADE	42
LU85M010	10" X 80 T ATB FOR MIRROR FINISH!	59
LU87M010	10" X 24T RIP BLADE THIN KERF	39
LU88M010	10" X 60T CROSSCUT THIN KERF	46
LU89M010	10" X 72T TCH NON FERROUS METAL	59
LU91M008	8 1/2" X 48T FOR COMPOUND MITER	43
LU92M010	10" X 80T TCH - BEST FOR LAMINATES	59
LU96M010	10" X 80 T TCH LAMINATES OR WOOD	69
TK206	10" X 24T THIN KERF RIPPING	25
TK306	10" X 40T THIN KERF COMBINATION	25
TK906	10" X 50T THIN KERF CROSSCUT	30
TK406	10" X 60T THIN KERF FINISHING	34
WC104	4 PC WOOD CHISEL SET W/CASE	39
WC110	10 PC WOOD CHISEL SET W/CASE	83
FB107	7 PC FORSTNER BIT SET W/CASE	55
FC107	7 PC CARBIDE FORSTNER BIT SET	84
SD308	8" SAFETY DADO WITH CASE	116
94-100	CABINET DOOR SET, 1/2" SHANK	164

SKIL

77	7 1/4" WORM DRIVE CIRCULAR SAW	145
1606-02	BISCUIT JOINER W/CASE & 200 BISCTS	125
2736-04	12V CRDLS VSR KYLS W/2 BAT, CASE	136
2976-02	3 3/8" CRDLS TILE CTTR, 12V W/WTR BTL	159
2977-02	3 3/8" CRDLS CIRCULAR SAW KIT, 12V	144
3330	16" SCROLL SAW	135
3370	4" BELT/6" DISC SANDER	135
3380	8" DRILL PRESS	135
3400	10" TABLE SAW	179
5557	*NEW! 7 1/4" CIRCLR SAW W FIVT FOOT*	112
7484	5" RANDOM ORBIT SANDER, 10,000 RPM	99

AEG

TXE150	6" VS DUST FREE RANDOM ORBIT SANDER W/VELCRO PAD	$144

Panasonic

EY6282LDKW	9.6V, 3/8" CORDLESS KIT, VSR W/2 BATTERIES, CHRGR & CASE	$158
EY6206EQK	12V, 3/8" KYLS CHK, VSR CRDLS W/15 MIN CHRG, CSE & NEW IRONMAN BATTERY	188
EY6207BC	12V, 1/2" KYLS CHK, VSR, CRDLS W/15 MIN CHARGE & CASE	215

Milwaukee

0228-1	3/8" DRILL, VSR, 3.5 AMP, 0-1000 RPM	105
0406-1	9.6V KYLS CDLS DRILL KIT W/2BAT, CS	169
0407-1	SAME AS ABOVE BUT 12 VOLT	179
6012	1/3 SHEET FINISHING SANDER	124
6014	1/2 SHEET FINISHING SANDER	124
6017	1/4 SHEET FINISHING SANDER W/BAG	55
6256	TOP HANDLE JIG SAW	145
6365	7 1/4" CIRCULAR SAW, 13 AMP	120
6490	*NEW* 10" MITER SAW	249
6507	VAR SPEED SAWZALL W/BLADES & CSE	143
6508	SAME AS 6507 BUT W/PERMANENT CRD	143
6511	2 SPEED SAWZALL W/BLADES & CASE	137
6527	SUPER SAWZALL W/BLADES & CASE	169
6528	SAME AS 6527 BUT W/PERMANENT CRD	169

MIRKA Abrasives, Inc.

5" SOLID PSA PAPER - 100 PER ROLL		
	80 GRIT	$13.95
	100 - 320 GRIT	12.95
5" HOLED PSA PAPER - 100 PER ROLL FOR PORTER CABLE HOLED PADS -		
	80 GRIT	13.95
	100 - 320 GRIT	12.95
6" SOLID PSA PAPER - 100 PER ROLL		
	80 GRIT	21.95
	100 - 320 GRIT	16.95

BOSTITCH

LIMITED QUANTITY - HURRY WHILE SUPPLIES LAST!

T29-30	BRAD NAILER 5/8" - 1 3/16" CAP	229
T28-5	CABINET STAPLER 1/2" - 1 3/16" CAP	249
N80S	STICK NAILER 6-16 PENNY	339
N50FN	FINISH NAILER 1 1/4" - 2 1/2" CAP	309

INTERNATIONAL TOOL CORPORATION

1939 TYLER STREET, HOLLYWOOD, FLORIDA 33020

1-800-338-3384

- FREE FREIGHT & SAME DAY SHIPPING ON MOST UPS ORDERS OVER $25.00 MINIMUM PURCHASE WITHIN THE CONTINENTAL U.S.A.

©

QUANTITIES LIMITED - NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS - PRICES SUBJECT TO CHANGE WITHOUT NOTICE

FAX US YOUR ORDER AT 1-305-927-0291

PRODUCTS THAT PERFORM

SHOP TESTED

Continued from page 78

Saw-alignment system with surefire precision

You can buy gadgets galore for aligning the cutting angles of your tablesaw or radial-arm saw, and I've tried many of them with mixed results. I recently tested the Woodhaven Saw Alignment System, and rate it a cut above other alignment aids because of its flexibility, ease-of-use, solid construction, and dead-on accuracy.

The System consists of several components that you buy individually or as a set. At the heart of this lineup is an aluminum Registration Fence with a straight, milled edge. Two powerful magnets hold the edge parallel to your blade and away from its teeth.

With the Registration Fence in place, you need to adjust the angle between it and the face of your miter gauge. You could use a try square or adjustable triangle, but I found Woodhaven's Setup Squares a better choice. These ¼"-thick acrylic pieces have the most commonly used angles precisely machined into them. The 11×11" White Setup Square has one 90° angle and two 45° angles. The Red Setup Square measures 9×5" and has these angles: 90° (two), 135°, and 45°. The Yellow Setup Square, with 8–9" long edges, has 60° and 120° angles used in making six-sided project pieces, and 67½° and 112½° angles for eight-sided projects.

To test the accuracy of the squares I built several multi-sided boxes. The joints fit together tightly, telling me the squares were precisely manufactured.

—Tested by Chuck Hedlund

Woodhaven Saw Alignment System, $69.98 for these items (individual prices in parentheses):

Registration Fence ($29.99); White Setup Square ($14.99); Red Setup Square ($11.99); and Yellow Setup Square ($15.99). Prices do not include shipping charges. Call 800/344-6657.

SAVE BIG ON CLOSEOUTS & STOCK REDUCTIONS

PANASONIC
EY571B 9.6V Cordless Drill $119
EY571BC with case 135
EY970B 9.6v battery 39

BOSTITCH
N80C Coil Framing Nailer 299
T36-16 T-Finish Nailer 289
T35-40 Brad Nailer 212

MAKITA
BO4510 Square Pad Sander 49
BO4530 Round Pad Sander 59
BO5000 Rand. Orbit Sander 66
LS 1030 10" Miter Saw 185
9.6 V Battery 24.50
7.2 V Battery 23.00
9.6 V Flashlight 39.00
3/8" Keyless Chuck 15.00

DUOFAST
CN-350 Framing Nailer 339

AEG
EY102 4" Plane $79
EZ1320 Cordless Screwdriver Kit 89
STSE380 Jig Saw 69
VS280 1/2 sheet sander 49

SKIL
2735:08 12V Cordless-2 batt 129
77 7 1/4" Wormdrive Saw 139
77-72 Wormdrive 140
7 1/4" Blades Box of 25 $49.50

DEWALT
DW682K Biscuit Joiner $225
DW100 3/8" 0-2500 Drill 64
DW102 3/8" 0-1200 Drill 89
DW250 0-4000 Screwgun 87
DW254 0-2500 Screwgun 87
DW357 7 1/4" Circular Saw 109
DW610 1-1/2 hp Router 145

TRI-CLAMP

Clamp 'n Tool Guide		Back-to-Back Bench Clamp	
50C	$ 29.50	BB50	$ 45.95
36C	26.50	BB36	37.95
24C	22.50	BB18	31.95

if you can plug it in...we've got it!

GREAT BARGAINS ON ALL YOUR FAVORITE TOOLS

Milwaukee
0234-1 1/2" Magnum $119

0222-1	3/8" Drill	$106
0224-1	3/8" Magnum	114
0375-1	3/8" RA Drill	127
0379-1	1/2" RA Drill	145
3300-1	RA Magnum	183
5392-1	3/8" Hammer Drill	114
6368	7 1/4" Circ.saw Kit	137
6527	VS Super Sawzall	164
6528	VS Super Sawzall	164
6546-1	2 spd. Cordl' Screwdriver	81
6583-1	HD ScrewShooter	145
6747-1	Drywall gun 0-2500	103
8977	VariableHeat Gun	74

6508 2 range VS Sawzall $132

SMARTLEVEL

SL224	2' economy Level	$ 54
PR24S	2' Pro Level w/case	88
PR48S	4' Pro Level w/case	105

STABILA
LEVELS - Hand holes. Two vertical-vials. Two milled faces. Yellow coat.

2464	24"	$ 36
2469	36"	39
2467	48"	45
2501	10" POCKET LEVEL	24
2699	6 ft —3vial	99
2700	6 ft 6" —3vial	115

LUFKIN 10 FT TAPE
ABBEY SPECIAL ~~$7.95~~ $3.95

HITACHI
C8FB Compound Miter Saw
CALL FOR BEST PRICE $ 18.95
Small Piece Fence 12.95
60 Tooth Carbide Blade 39.95

C10FA	10" Miter Saw	269
CR10V	Recipro Saw	116
CJ65VA	Orbital Jigsaw Kit	155
F20A	Plane	94
M12V	3 1/4hp Plunge Rtr	223
TR12	Plunge Router	168

NAIL GUNS

NR83A	Framing Gun	398
NT45A	18 g Finish Nailer	274
NT65A	16 g Finish Nailer	314
N3824A	1" Roofing Stapler	329

SENCO NAIL GUNS
not avialable in all areas

LS2	Pinner 5/8" - 1"	$ 209
SCN200R	Coil Roofing Nailer	375
SFN1	1"-2" Finish Nailer	249
SFN2	Big Finish Nailer	349
SKS	1/4" Crown Stapler	239
SN70	NEW!Framing Nailer	467

SLP20 Pinner 5/8"-1 5/8" $242

Emglo

AM78HC2	11/2 HP-1 tank	$ 279
AM78HC4V	11/2 HP-2 tank	299

The Kreg Jig Pockethole $99
for joining faceframes, butt joints and other pocket hole applications

PORTER•CABLE
330 Palm Sander final cost $49
after $10 rebate from Porter•Cable

100	7/8 hp Router	$ 98
315-1	7 1/4" Circular Saw	117
351	3x21 Belt Sander	139
352	3x21 Belt Sander w/bag	141
360	3x24 Belt Sander w/bag	182
361	3x24 Belt Sander	175
362	4x24 Belt Sander w/bag	189
363	4x24 Belt Sander	185
505	1/2 Sheet Sander	118
513	Lock Mortiser	679
59381	Door Hinge Kit	165
690	1-1/2 hp Router	132
693	Plunge Router	164
6931	Plunge Base	74
659	Drywall Screwgun	79
696	Router Table	122
7310	Trim Router	87
7336	6" R.O. Sander	134
9118	Door Plane Kit	203
9345	6" SawBoss Kit	122
97310	Trimmer kit	194
9840	New 9 V cordless	159
9853S	12V Cordless-2 batt	179
Router Edge Guides		14.95
Template Guide Set		32.95
Corner Chisel		17.95

freud
94-100 5pc $158 Router Bit Cabinet Set

FT2000E	Vs Plunge router	$ 199
JS100	Biscuit Joiner	159
$30 Rebate on these tools til 10/93		
LU85M010	10" 80T Finish	58
LU84M011	10" 50T Combo	39
LM72M010	10" 24T Rip	37

BT3000 RYOBI 10" Pro Table Saw $544

AP10	10" Planer	$ 379
AP10 Replacement Blades		24.95
AP12	NEW! 12" Planer	425
BE321	3x21 Sander	128
BT3000W	Table Saw w/stand	599
DS1000	New! Detail Sander	49
JP155	6" Planer	295
JM100K	Biscuit Jointer	204
L1323ALSK	Plane	125
R501	2hp Plunge Router	148
RE600	3hp Plunge Router	204
RS112	Random Orbit Sander	52
SC160	Scroll Saw	138
TFD170-2	9v Cordl's Drill -2 batt.	148
TFD220-2	12v Cordl's Drill -2 batt.	164
TS260	NEW! 10" Comp. Miter	245

DS1000 SANDPAPER
40,60,80,100, 150 Grit , Assorted 10 pieces.....$3.25

HOOK & LOOP SANDPAPER

PORTER/CABLE	5" discs	10 count
BOSCH	5" discs	10 count
MAKITA	5" discs	10 count

All GRITS.10pc.$4.95

STIK-ON SANDPAPER

Grit	10yards 4 1/2" roll	'GOLD' C weight discs pieces 6" round	5"round
60	N/A	100 pc 19.95	15.95
80	10.95	100 pc 18.95	13.95
100	9.85	100 pc 17.95	12.95
120	9.85	100 pc 17.95	12.95
150	9.85	100 pc 17.95	12.95
180	9.85	100 pc 17.95	12.95
220	9.85	100 pc 17.95	12.95

BIESEMEYER

T50	50" Commercial Fence	$294
HS52	50" Home Shop	235
HS40	40" Home Shop	222
TABLE SAW INSERTS		9.95
MITER SAW STOP		69

BOSCH

1194VSR	1/2" Hammer Drill	$144
11212VSR	SDS Roto Hammer	194
1615EVS	3 hp Plunge Router	257
1604	1 3/4 hp Router	133
1609K	3-base Trimmer kit	173
3283DVS	5" R.O.Sander	95
3051VSRK	With 2 batteries	148

1581VS $138 VS Orbital Jigsaw

BLACK & DECKER

1166	3/8" 0-2500 Holgun	$62
1167	3/8" Drill w/Keyless Chuck	68
1180	3/8" 0-1200 Holgun	103
1703	10" Miter Saw	185
2038	0-4000 rpm Drywall gun	99
2670	1/2" Impact	139
2664K	Cyclone 9.6v Cordless	139
2665K	Cyclone 12v Cordless	159
2750	Mini Grinder	79
3338	ELU Plunge Router	253

2720 1.5 hp Router 1/4" collet $129

2721	1.5 hp Router 1/2" collet	139

DELTA
37-070 $249 6" Table Top Jointer

11-950	8" bench Drill Press	$144
14-600	Hollow Mortse Chisler	448
22-540	12" planer	398
28-180	10" band saw	169
31-050	1" belt sander	78
31-080	1" Belt 5" Disc Sander	94
32-100	Plate Joiner	269
33-060	Sidekick F&T Saw	368
36-040	6" Compound Miter	149
36-090	Sidekick 10" Miter Saw	218
36-220	10" Compound Miter	234
40-150	15" Scroll Saw	115
40-560	16" Scroll Saw	188
40-640	20" Scroll Saw	318

USE VISA, MC, DISCOVER
FREE SHIPPING on orders from this add over $50, Within continental 48 states, HI and AK extra. Sales limited to stock on hand.

ABBEY TOOLS
1-800-225-6321

1132 N. MAGNOLIA, ANAHEIM CA. 92801
OPEN 8-5:30 WEEKDAYS 9-2 SATURDAY
Calif. residents add 7.75% state sales tax
SERVING YOU FOR OVER 15 YEARS
Prices subject to change without notice

WOOD TOY

★ Patterns
★ Parts
★ Wheels
★ Many New Patterns to Choose from.
★ Executive toys

SEND $1.00 FOR NEW CATALOG & RECEIVE COUPON FOR **FREE** WHEELS & AXLE PEGS.

toys and joys

Box 628W Lynden, Wash. 98264

PLANS & KITS

* Patterns
* Parts
* Brass Glass
* Hardware
* Molding

Plans $9.95
Hardware Kit $189

Send $1.00 for new catalog.

PLAN E1115

DREAMWOOD
Dept WD-7
275 Fairchild Ave. #103, Chico,Ca.95926

Supplement Your Income From Your Home With A Computer!

Begin part-time and still retain the security of your present position. We offer 20 services you can perform for your community from your home. No experience necessary—easy to learn. We provide training and computer. For FREE explanation cassette and literature call:

1-800-343-8014, ext. 184
Computer Business Services, Inc.

Wood-Mizer®

World's Largest Manufacturer of Portable Sawmills

*Models from $6995!**

Own a Sawmill!

1-800-553-0219

32-Page Full-Color Catalog $2.00
Business Profitability Booklet $2.00
66-Minute Demonstration Video $10.00
Mastercard or Visa Accepted
Shown with optional trailer

Wood-Mizer Products, Inc.
8180 West 10th Street, Dept. GQ77
Indianapolis, IN 46214-2400

Quality
MECHANISMS
For Making
WOODEN BARREL

- Pens
- Pencils
- Roller Balls
- Fountain Pens

plus other related items.

Wholesale/Retail

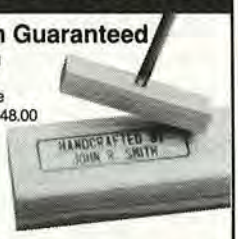
Call or Write:

The Berea Hard Woods Co.
6367 Eastland Rd. Brookpark, Ohio 44142
216-234-7949 *Master Card/Visa*

BRANDING IRON

Your Satisfaction Guaranteed

- Convenient torch heating
- Solid Brass—lasts years
- Special wording available
- Electric Models Start at $48.00
- 2nd line— 20 letters/spaces max.
- 1/4" letters
- Distinctive Border
- Add $3.50 shipping and handling
- OH res. add 6% sales tax



DISCOVER VISA MasterCard AMERICAN EXPRESS **$28.00**

Order by mail from:
BrandMark
462 Carthage Dr., Dept. W9-3
Beavercreek, OH 45434-5865
(513) 426-6843

TO ORDER CALL TOLL FREE
1-800-323-2570
8:00-5:00 EASTERN TIME

FALL INVENTORY CLEARANCE

SAVE Up To 40%

Build It Yourself
16x32 25x40
30x48 60x140

STEELMASTER

800-888-4606

MAGNATE WB-15 Woodboxed 15pc Carbide Tipped Router Bit Set

1/4" and 1/2" shank available, sand blasted

TOLL FREE 1-800-827-2316
MAGNATE BUSINESS INTL.
1930 S. Brea Canyon Rd. #170, Diamond Bar, CA 91765
909-861-1185 Fax 800-733-9076
Ask for Free 1993/94 Edition Catalog

DON'T CUT PLYWOOD

WITHOUT THE
PLYMATE SAW GUIDE
use with circular saw

- **A MUST FOR CARPENTERS, CABINET MAKERS, DO-IT-YOURSELFERS**
- **EXCELLENT AS A STRAIGHT EDGE FOR ROUTER**
- **QUICK, ACCURATE, SAFE**

$33.95 for 4 ft. model
$53.95 for 8 ft. model

for free literature or to place orders call
1-800-PLYMATE (759-6283)
OLIVE KNOT PRODUCTS
1409 North St. Corning, CA 96021

PALEO™ CANOE COMPANY

BUILD YOUR OWN CEDAR STRIP CANOE

★ **2½ HR STEP-BY-STEP VIDEO INCLUDES FREE FORM TEMPLATES AND ALL THE KNOW HOW TO GUIDE YOU FROM BEGINNING TO END. $39.95 plus $3.00 S&H.**

★ **DO-IT-YOURSELF KITS INCLUDE ALL MATERIALS NEEDED TO BUILD A 14' OR 16' CANOE PLUS OUR STEP-BY-STEP VIDEO.**

FOR MORE INFO & PRICES CALL OR WRITE

PALEO CANOE CO., P.O. BOX 491
BEDFORD, MA 01730, (617) 275-3004

HARDWOODS

EXOTIC & DOMESTIC
OVER 75 SPECIES
LUMBER • VENEER • TURNING STOCK

COLLECTORS SAMPLE KIT
30 GORGEOUS WOODS
Exotic & Domestic from Around the World
1/2" X 3" X 6" Sanded Finish
$39.00 *ppd in Cont US

Together with Book of Fine Hardwoods $51.00 *ppd in Cont US
Over 70 woods shown in full color. Charts compare physical properties. 60 pgs

1-800-423-2450
WOODWORKERS Source
5402 S. 40th Street • Phoenix, AZ 85040
602-437-4415

SQUARE DRIVE SCREWS

Simply the Best!

- **Square Drive Beats Driver Slippage**
- **Hardened Steel for Extra Strength**
- **Deep Thread for Super Grip**
- **Also Brass and Stainless**

Send $3 for Samples and Catalog

McFEELY'S SQUARE DRIVE SCREWS
P.O. Box 3 • 712 12th St
Lynchburg • Va • 24505
Toll Free 1-800-443-7937
or FAX (804) 847-7136

WIN A FREE HEGNER SCROLL SAW

After fifteen years of leadership, HEGNER Precision Saws are still the #1 choice! Now you can win a HEGNER... absolutely FREE!

We will also send you our catalog, at no cost or obligation. Call or write today!

1•302•322•2226 ☎
ADVANCED MACHINERY IMPORTS, LTD.
P.O. Box 312, Dept. 573 New Castle, DE 19720

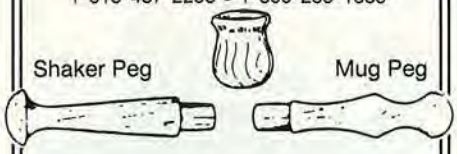
BRANDING IRON
For hard and soft wood

$29.00
Plus $3.00 for shipping and handling
Nebr. residents add correct sales tax
SATISFACTION GUARANTEED or your money back

- Shipped in one week
- Solid brass head — raised letters
- 1st Line: HAND CRAFTED BY — as above
- 2nd Line: Your choice — 20 characters/spaces max.
- Electric iron available for $49.00 + $3.00

ORDER YOUR IRON TODAY, CALL TOLL FREE . . .
1-800-826-7606
Order by mail from: NOVA TOOL CO.
12500 Finigan Rd., Dept. B9
P.O. Box 29341, Lincoln, NE 68529
VISA MasterCard DISCOVER

SHAKER PEGS
CANDLE CUPS
MUG PEGS
$17.95 per 100, prepaid.
Wide selection of other wood products.
Catalog $1.00 or free with order.
Benny's Woodworks
P.O. Box 840, Dept. WD74
Shelbyville, TN 37160
1-615-437-2295 • 1-800-255-1335



MAKE TOYS
CLOCKS & WHIRLIGIGS
Door Harps, Dollhouses, Music Boxes, and Dozens more fun Wooden Toys from our plans, parts, kits & supplies. Bulk Price available. **Catalog $1.00.**
CHERRY TREE TOYS
Box 369-335,
Belmont, OH 43718
1-800-848-4363, ext. 335

YESTERDAY'S TOOLS

AN END-GRAIN SPECIALIST

THE SHOOT BOARD AND PLANE

Earlier in this century, woodworkers turned to Stanley's no. 51/52 shoot board and plane combination to trim end grain precisely. The sets are rare today.

Equipped with a handsaw we would consider dreadfully dull today and a miterbox that was crude at best, a craftsman of past centuries had only the slimmest chance of sawing a tight-fitting miter joint. And he knew it. That's why he kept a plane and shooting board handy.

A shooting board incorporates a groove or rail to guide a plane in a straight line. Holding the workpiece at the desired angle to the guide allows precise trimming.

Well into the 19th century, craftsmen built their own shooting boards. But around mid-century, commercial wooden ones arrived on the scene. (The variety barely exceeded the many versions of the name: it variously appears as shuteing, schuting, shoot, and chute, among others.)

Then, as the Industrial Revolution took hold, iron woodworking tools gained favor. The late 19th century saw a flurry of patents issued for miter-planing tools. Though none sold well, many represented "beautiful examples of the Victorian synthesis of form, function, and art," notes antique-tool dealer Martin Donnelly of Bath, New York.

One that met with commercial success came along in 1905. The Stanley no. 51/52 chute board and plane (called "shoot board and plane" from 1912 until production ended in 1943) was a practical end-grain planer.

The cast-iron no. 52 shoot board features a pivoting fence at one end. The fence sets the desired angle in relation to a groove running the length of the board. Stanley's unusual-looking no. 51 plane fits into the groove.

The no. 51's cast-iron body resembles a length of angle iron. One side slides in the baseboard groove, the other extends upward on the fence side of the groove. The plane iron protrudes through the vertical face. The plane was sold separately from 1909 on.

A sliding back on the fence adjusts to support the workpiece within a fraction of an inch of the cutting edge. An adjustable foot (the sliding back clamp) helps hold the work as the plane slices the wood cleanly and accurately.

The 51/52 combination would be handy to have today. Finding one could be a problem, though. Collector Donnelly says that complete examples rarely show up on the market. "Few were likely sold new," he explains, because of their cost and specialized nature. At $17 in 1905, it would have been a tool for commercial shops, not home or farm shops.

Bulky and breakable, "they were likely to deteriorate, or be discarded," Martin says. "Many now show evidence of neglect."

Even a marginal set missing the sliding back clamp (a common fault) sells for $700–900. A collector-quality example as shown commands $1,600 or more.

Tool from the collection of Martin J. Donnelly, Bath, N.Y.
Written by Larry Johnston
Photograph: John Hetherington

THE
PERFECT GIFT
FOR HOME WOODWORKERS!

Better Homes and Gardens®
WOOD®

ONE FULL YEAR (9 ISSUES) ONLY $24.97

To order, call TOLL-FREE 1-800-374-9663
or write WOOD Magazine, 6060 Spine Road,
P.O. Box 55049, Dept. 4ZFN0, Boulder, CO 80322-5049

FREE FREIGHT
SAME DAY SHIPPING

DeWALT **DW682K**

Includes Free Biscuit Assortment

$249

Heavy-Duty Plate Joiner Kit Complete w/dust bag, steel case & $40 of assorted biscuits

DW675K 3-1/8 7.2A Planer Kit	$168
DW615 1-1/4 HP VS. Plunge Router	$168
DW431 3"x21" Var. Speed Belt Sander	$189
DW625 3 HP H.D. VS. Plunge Router	$284
DW705 12" Compound Miter Saw	$369
DW944K2 9.6V Driver-Drill Kit w/Free Battery	$149
DW945K2 12V Driver-Drill Kit w/Free Battery	$179

Complete Line at the Right Price!

ORDER TODAY & SAVE!
1-800-262-5482

HOME LUMBER CO.
449 WHITEWATER ST., WHITEWATER, WI 53190
C.O.D.

Build a Clock
FOR ONLY $4.95
OR LESS WITH OUR QUANTITY PRICES

Each Mini Quartz Movement comes with free hands and a 6-YEAR WARRANTY.

Call 1-800-KLOCKIT
(that's 556-2548)
for your FREE CATALOG with our movements, quartz inserts, watches, clock kits, and all your clockmaking accessories.

100% Satisfaction Guarantee on all our products.

Discover the FUN and EXTRA INCOME potential of clockmaking.

Name _____
Address _____
City, State, Zip _____

KLOCKIT® Dept. WD93
P.O. Box 542
Lake Geneva, WI 53147-9961

Classic Furniture, Inc.

Solid Mahogany
Revolving Book Case
20 x 20 x 47
Complete Kit $165
Plans Only $9.95

2067-C Valleydale Terrace,
Birmingham, AL 35244
(205) 985-9620

SUPER SALE
Canadian Sugar Maple 5/4" Thickness

We stock the best available *Appalachian* and *Exotic* hardwoods, *veneers* and *plywood*.

Exceptional widths and thickness in stock.

Turning and carving blocks.

Let us introduce you to one of the largest lumber selections anywhere.

HARTWOOD, LTD.

Bartley Finishes

Old-fashioned Milkpaint

WEST SYSTEM Epoxy

Call/write for free price list & newsletter.
HARTWOOD, Ltd.
East Golden Lane, PO Box 397, New Oxford, PA 17350
Phone: (717) 624-9292
Fax: (717) 624-4365
U.P.S.

RBI Hawk Scroll Saws

MADE IN THE U.S.A.
An American-made precision tool built to withstand years of use

PATENTED CAM-OVER TENSION AND UPPER BLADE HOLDER WITH KNOB
Changes blades in seconds, make inside cuts faster & easier (standard on 220VS & 226VS)

PATENTED REAR CAM-OVER
For quicker and easier resetting tension after repositioning blade

RBI EXCLUSIVE! NEW PATENTED HOLDDOWN FOOT
Maximum control for when you're making the most intricate cuts

SAFETY STOP AND SPRING
Assures safe operation even when a blade breaks

ALL CAST AND MACHINED PARTS
Durable construction that lasts a lifetime—no plastic parts

RBI EXCLUSIVE! EXTRA-LARGE CAST ALUMINUM TABLE
Gives a larger work area in front of centrally located blade for better control and support of your work while sawing

RBI EXCLUSIVE! FLEX BELLOWS
Keeps work area clear for better visibility and added safety

RBI EXCLUSIVE! ADJUSTABLE TILTING WORK TABLE
Tilts full 45° left or right unlike other scroll saws that only tilt one way

PRECISION-CRAFTED STEEL BASE AND HEAVY-DUTY STEEL LEGS
For smooth, vibration-free operation

TEFC INDUCTION MOTOR
Totally enclosed and fan-cooled to cut maintenance costs and time, as well as protect against damaging dust

SELF-LEVELING SHOCK-ABSORBING FEET
Keep your Hawk steady while in use

All RBI Models Rated
"Excellent"
in Vibration, Speed Control, & Quality of Cut.
-Wood Magazine

Whichever **HAWK** you buy, the 16", the 20", or the 26", you are guaranteed to get the best variable speed scroll saw available. Cut wood, metal, glass, plastic, tile, rubber, fabric, and more. The **RBI Hawks** are the most versatile and safe tool you'll ever own.

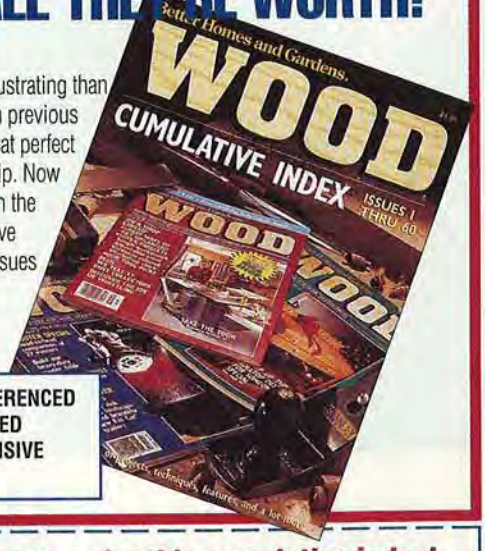
Call 800-487-2623 For Your FREE Info Kit.

C-39 A

rbindustries
The American Tool Manufacturer
1801 Vine Street • Harrisonville, MO 64701

USE YOUR BACK-ISSUES FOR ALL THEY'RE WORTH!

Nothing's more frustrating than searching through previous issues to locate that perfect project or timely tip. Now find these fast with the WOOD® cumulative index, covering issues 1 through 60.



- **CROSS-REFERENCED**
- **ALPHABETIZED**
- **COMPREHENSIVE LISTING**

YES! I want to order this cumulative index!

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

MAIL YOUR ORDER TO:
WOOD® CUMULATIVE INDEX 1-60
P.O. BOX 9255 WCI-60A
DES MOINES, IOWA 50306

Each index is **$4.95** + **$2** Shipping & Handling

_____ (no. of copies)
x **$6.95** each = $_____

State and local taxes, if applicable, are included. For Canadian or other foreign orders please add $2.00 for each index. Allow 4-6 weeks for delivery.

100% Money-Back Guarantee if Not Completely Satisfied.

Hold everything.

Here's the third hand you always wanted: the revolutionary QUICK-GRIP® Bar Clamp.

Its unique pistol-grip handle lets you hold the clamp and adjust jaw pressure with just one hand – an easy solution to even the most demanding clamping problem. For wood, plastic or other materials, the new QUICK-GRIP Bar Clamp makes any job easier and faster.

The QUICK-GRIP Bar Clamp was named one of *Popular Science's* top 100 new products. You'll know why, the first time you hold one in your hand – it's light, strong, quick to use. It's just what you'd expect from the makers of VISE-GRIP® Tools.

U.S. Patents 4,926,722; 5,022,137. Other U.S. and foreign patents issued and pending.

QUICK-GRIP®
A UNIT OF AMERICAN TOOL COMPANIES, INC.

©1990/1992 American Tool Companies, Inc.

MADE IN USA

SIGNCARVING

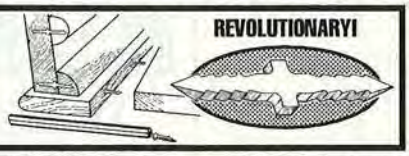
IS FUN & PROFITABLE

And it's easy, if you use the Marlin Woodcarvers and accessories. You can carve signs quickly at home or at swap meets. *No special training is required.* The machines do the work, the operator has the fun and the profits. These machines will also 3-D carve panels and plaques. Our templates work well with other machines.

SEND FOR OUR FULL LINE BROCHURE AND PRICE LIST
AND START PLANNING YOUR FULL OR PART-TIME BUSINESS.

MARLIN INDUSTRIES, INC.
Div. of terrco, inc.
222 1st Ave. N.W. • Watertown, SD 57201
(605) 882-3888 • Fax (605) 885-0778

DOUBLE 'T' FASTENER



- Wood joints without nails or dowels
- Attach trim & mouldings-*no nail holes to fill*
- For use in edge & butt joints
- Hold glue joints without clamping
- Use in place of biscuits
- For wood 3/4" or thicker

#58581 1 Pkg. Setting Tool + 30 Fasteners.....$7.99
#58582 Pkg. of 50 Fasteners.....$7.99
2 OR MORE PACKAGES- EACH.....$6.49

SAVE! Shipping $1/pkg. - 4 or more SHIPPED FREE! Michigan residents add 4% tax.

GIFTS OF CREATION/FASTENER DIVISION
P.O. Box 875•St. Joseph, MI 49085-0875•(616) 429-8818

Attention Woodworkers!
Our new catalog is loaded with unique, easy-to-follow plans. You'll make sensational gifts or extra income.

Plus get quantity discounts on:
- Lamp Parts
- Music Movements
- Turned Wood Parts

And Much More!

Order your **FREE** Geneva Specialties catalog today. (Or call 1-800-556-2548.)

Name _____
Address _____
City _____ State ___ Zip ____

GENEVA Specialties®
A DIVISION OF KLOCKIT

Dept. WDA93
P.O. Box 636
Lake Geneva
WI 53147-9961

Heavy Duty Plate Joiner Kit w/Biscuits

$225. DEWALT
#DW682K

DW705	12" compound saw with dust bag	**$359.**
DW625	***NEW*** 3 hp vs plunge router	**279.**
DW945K-2	12V drill w/2 batteries	**169.**
DW615	***NEW*** 1-1/4 hp vs plunge router	**169.**
DW364	7-1/4" saw with brake	**148.**
DW254	0-2500 deck scrugun	**89.**

TOOL CRIB OF THE NORTH
PO Box 1716
Grand Forks, ND 58206

1-800-358-3096

TIRED OF THE SAME OLD THING?

WOODWORKERS • CABINETMAKERS • CONTRACTORS
THE SHOW

AMERICA'S NEWEST SHOW
THE SHOW IS FOR YOU IF YOU LIVE IN:
CT,DC, IA, IN, KS, KY, LA, MA, ME, MD, MI, NC,NE, NH, NJ, NY, OH, PA, RI, SC, SD, TN, TX, VA, VT
24 EAST AVENUE #173, NEW CANAAN, CT. 06840
1-800-287-7891

From the editors of
Decorative Woodcrafts™ Magazine

Pick up on the newsstand after Sept. 14

- ***68 pages***
- ***50 Santas, angels and more***
- ***Full-color patterns***
- ***100 pages***
- ***35 all-new projects***
- ***Full-sized patterns for all projects***

OR ORDER FOR HOME DELIVERY

Mail to: Decorative Woodcrafts Magazine, P.O. Box 9255, Dept. WD17, Des Moines, IA 50306

Each magazine is $4.95 plus $2.00 postage and handling. Allow 4-6 weeks for delivery.
Collectible Country Ornaments
____ (no. of copies) x $6.95 each = ____
Christmas Woodcrafts
____ (no. of copies) x $6.95 each = ____
State and local taxes, if applicable, are included. Please add $2 for each magazine for Canadian and other foreign orders.

Name _____
Address _____
City _____
State _____ Zip _____

OR CALL 800-572-9350 for Visa or MasterCard orders

100% MONEY-BACK GUARANTEE IF NOT COMPLETELY SATISFIED.

WOOD PARTS FROM MIDWEST DOWEL WORKS

Compare Our Low Prices!

		Qty.	Cost
3-1/2" Poplar Shaker Peg	$15/100	___	___
1-3/4" Mini Shaker Peg	$7/100	___	___
3-1/2" Country Wall / Mug Peg	$15/100	___	___
2-1/2" Country Shorty Peg	$12/100	___	___
Large Bean Pot Candle Cup	$17/100	___	___
Brass Inserts	$9/100	___	___
1/2" Mini Candle Cup	$10/100	___	___
1-1/2" Toy Wheel	$10/100	___	___
2" Toy Wheel	$17/100	___	___
Axel Pegs	$4/100	___	___

SMOOTH SANDED HEARTS

3/4"x1/8" Hearts	$3/100	___	___
3/4"x1/2" Hearts	$5/100	___	___
1"x3/16" Hearts	$5/100	___	___
1"x3/8" Hearts	$7/100	___	___
1-3/8"x1/8" Hearts	$6/100	___	___
1-3/8"x1/4" Hearts	$8/100	___	___
1-3/8"x1/2" Hearts	$11/100	___	___
2"x1/2" Hearts	$19/100	___	___

Great Buys!

		Qty.	Cost
3/8"x36" Standard Dowels	$21/100	___	___
3/4"x36" Oak Dowels	$16.50/10	___	___
3/8" Maple Buttons	$2.15/100	___	___
1/2" Maple Buttons	$2.25/100	___	___
1-1/2" Maple Spindles	$9/100	___	___
2-1/8" Maple Spindles	$18/100	___	___

ORDER NOW

☐ MC/Visa ☐ Check Enclosed

Total Cost _____
Handling $3.00
Ohio residents add 5½% sales tax _____
Final Cost _____

MC/Visa Number _____
Expires _____ Phone _____
Name _____
Address _____
City/State/Zip _____

FREE! 16-PAGE CATALOGUE

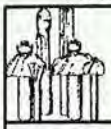
MIDWEST DOWEL WORKS

4631 Hutchinson Rd., Cincinnati, OH 45248
513-574-8488

Same Day Service/ Order Before Noon
Factory Direct/ Satisfaction Guaranteed

Serious Power Tools™

WE PAY ALL SHIPPING CHARGES ON TOOL AND ACCESSORY ORDERS OVER $50.00 SHIPPED WITHIN THE CONTIGUOUS U.S.A. !!!

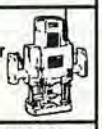


All BOSCH Router Bits Are 40% Off The Manufacturer's Suggested Retail Price.

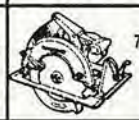
BOSCH
2 Horsepower Plunge Router
Model 1613EVS
Mfg. Sug. Price: $330.00
TDT Price: $189.00

PORTER CABLE
Speed-Bloc Finishing Sander
Model 330
Mfg. Sug. Price: $105.00
TDT Price: $58.00

BOSCH
3 1/4 Horsepower Plunge Router
Model 1615EVS
Mfg. Sug. Price: $460.00
TDT Price: $257.00



PORTER CABLE
3" x 21" Dustless Sander
Model 352
Mfg. Sug. Price: $280.00
TDT Price: $156.00



BLACK & DECKER
7 1/4" Sawcat Circular Saw
Model 2684
Mfg. Sug. Price: $254.00
TDT Price: $129.00
with free case while supplies last

BLACK & DECKER
3/8" VSR Cordless
Drill Kit with case. (12 Volt)
Model 2765K-2
Mfg. Sug. Price: $282.00
TDT Price: $159.00

BLACK & DECKER
ELU Plate Joiner Kit
Model 3379K
Mfg. Sug. Price: $406.00
TDT Price: $235.00

-If you are not satisfied with your purchase, return it prepaid within 30 days for a full refund.
-No C.O.D. shipments.
-We accept:

-We reserve the right to correct printing errors.
-Prices subject to change without notice.
-Some quantities are limited.
-These are mail order prices.
-Illinois residents add 7.25% sales tax.
- $15.00 charge for air shipping.

TEPPER DISCOUNT TOOLS

MAIL ORDER DIVISION
107 W. SPRINGFIELD, CHAMPAIGN, IL 61820
FAX (217) 356-1975

ORDER LINE : 1-800-626-0566

Specializing in Black & Decker industrial, Milwaukee, Bosch, and Porter Cable power tools. Call the order line to receive a copy of our complete catalog.

W6934

TRANSPOWER

FOR EXPRESS NEW CATALOGUE CALL
1-800-654-7702

TS200HD

HP500

SUPER HEAVY DUTY WOODWORKING EQUIPMENTS

200HD	10" SUPER HEAVY DUTY TABLE SAW, 3HP	$940
200HA	10" SUPER HEAVY DUTY TABLE SAW, 3HP	$740
MS250	10" TABLE SAW, 1½HP	$345
SB800	20" BAND SAW, 3HP	$1290
SB700	18" BAND SAW, 2HP	$625
SB600	16" BAND SAW, 1½HP	$475
SB500	14" BAND SAW, ¾HP	$250
AP200A	20" AUTO PLANER, 2 SPEEDS, 3HP	$1275
AP400	24" AUTO PLANER, 3 SPEEDS, 7HP	$2590
AP650	15"X8" AUTO PLANER, 2 SPEEDS, 2HP	$695
AP800	16"X8" AUTO PLANER, 2 SPEEDS, 3HP	$740
AP150	12"X6" AUTO PLANER, 2HP	$345
SP980	TILTING SPINDLE SHAPER, 1¼" & ¾", 3HP	$1250
HP500L	3HP SHAPER, 1" ¾" ½" SPINDLES	$795
HP500	3HP SHAPER, 1" ¾" ½" SPINDLES	$740
DH150	1½HP SHAPER, ¾" ½" SPINDLES	$398
JT650	6" LONG BED JOINTER, 1HP	$325
JT860	8" HEAVY DUTY JOINTER, 1½HP	$650
1200	12" HEAVY DUTY JOINTER, 3HP	$1695
747	DUST COLLECTOR, 650 CFM, 1HP	$175
2000	DUST COLLECTOR, 1250 CFM, 2HP	$294
3000	DUST COLLECTOR, 1850 CFM, 3HP	$345
RF150	AUTO FEEDER, ¼HP	$385
RF250	AUTO FEEDER, 1HP	$640
SD800	90" EDGE SANDER, 2HP	$420
SD1200	123" EDGE SANDER, 2HP	$980
DB600	AIR DRUM SANDER, 1 HP	$285

..... AND MORE.

C.P. Tools, Inc. • 14257 E. Don Julian Rd., Industry, Ca. 91746 818-333-7701

ASK WOOD

Whether your woodworker's license reads "Beginner," "Intermediate," or "Advanced," you're bound to have a few questions about your favorite hobby. We can help by consulting our staff and outside experts. Send questions to:

Ask WOOD
Better Homes and Gardens®
***WOOD®* Magazine**
1912 Grand Ave.
Des Moines, IA 50309-3379

Print this article

WOOD keeps computers busy

Your illustrations in *WOOD* magazine interest me. The diagrams and the exploded views are clean and clear to understand. Do you use a computer program for the design and drafting of these projects? If so: 1) What software program is used? 2) Is this a 3-D package? 3) Will it automatically calculate the cutting diagram and bill of materials? 4) Does it include a library of predrawn symbols such as screws, nails, brackets, etc.?

—John Steinmaus, Fremont, Calif.

John, we use Design CAD, a Computer Aided Drafting program from American Small Business Computers, Pryor, Oklahoma 918/825-4844. It comes in either 2-D or 3-D and a library of symbols is available. It does not calculate the cutting diagram. However, a program called Casper by Roger and Ryan Drummond, Herminie, Pennsylvania (412/446-0159), will form the optimal cutting diagram after you enter the bill of materials.

Making wooden rings

My daughter has asked me to make her a wooden ring 1½" thick with an outside diameter of 5½" and an inside diameter of 4" (¾" wall thickness). I've tried using my wheel/hole cutting tool in the drill press, but the stress forces the chuck to pull free from the spindle after a few revolutions even running at the lowest rpm possible. Is there a safe and simple way of making this kind of ring?

—Barney Brady, Houston, Texas.

Barney, our project builder Jim Boelling suggests two possible ways to make the ring safely and efficiently. Begin with a 6"-square, ¾"-thick workpiece with the ring's pattern drawn on it. Drill a start hole in your workpiece. Then, scrollsaw or jigsaw the inside circle to size, cutting just inside the line. Next, drum-sand to the scribed line to complete the ring's inside circle. Cut the outside circle and sand.

Old glue likes to stick around

Some time ago, someone leaned back a little too far in a dining room chair, and the rear leg broke away from a cross member. To make matters worse, someone tried to glue it back and did a rather messy job. The problem now is removing the old glue so I can disassemble the leg parts and reglue them. But I want my repair to look as though the chair was never broken.

I read that white vinegar will melt out old glue. Is that really so, or do you have a better idea? I have applied vinegar, but there seems to be no reaction. Any suggestions?

—George Mitro, El Paso, Texas.

George, some glues, regardless of age, don't want to let go. And though warm white vinegar will occasionally soften up old glue, usually you must remove it with a chisel or knife.

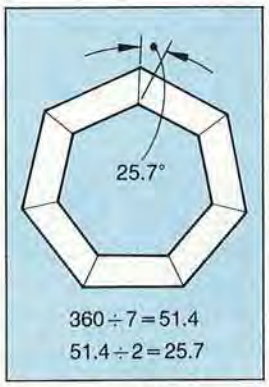
If the existing glue in the joint remains stubborn, just remove the unsightly exposed glue around it. If, on the other hand, the joint is weak, use a wood or rubber mallet to tap the leg pieces apart. Then, scrape and sand the joining parts down to bare wood and rejoin. If the joints fit too loosely after cleaning, glue thin shims of wood in the openings, and before the glue sets, apply more glue in the openings and insert the mating pieces. Clamp until dry with a strap clamp or two, and remove any squeeze-out with a damp cloth. Touch up to match with stain and finish.

Figuring angles for many-sided objects

How do you figure the angle for each piece of a seven-sided object?

—John Elliott, Harkers Island, N.C.

We asked project builder Jim Boelling to respond, John. "This formula works on any multiple-sided object. First, divide 360 by the number of sides. Then divide that number by two. This gives you the angle per edge per piece." For example, you want a seven-sided object. The equation right *shows how we got an angle per edge of 25.7 degrees.*



Continued on page 89

STORAGE BUILDINGS
WORKSHOPS & MORE
MANUFACTURER DIRECT
LIMITED OFFER

EASY DO-IT-YOURSELF CONSTRUCTION
PACKAGES INCLUDE STEEL FRAMES, SHEETING AND HARDWARE
FEATURED PACKAGES INCLUDE:
12'-0" BAY SPACING
40 psf Snow Load, 20 psf Wind load
CERTIFICATION AVAILABLE

30x36 Value $6,552 *NOW $3,359*	34x48 Value $10,349 *NOW $5,317*
42x60 Value $14,779 *NOW $7,731*	46x72 Value $20,008 *NOW $10,935*

Other sizes available

MIRACLE TRUSS
1-800-843-8275
FAX 612-544-1835
Made in America WM

GREAT IDEA!

"This has to be the most attractive and practical way yet to cover a pickup bed."

A key locked roll-up hard cover that's weathertight.

for free brochure on the
ROLL-TOP-COVER™
call or write: Pace-Edwards Co.
100 Commercial Street
Centralia, WA 98531
1-800-338-3697

PRANCER
When you push his tail he plays "Rudolph" while his red light nose blinks to the music. About 17" ht.
#01556N Plans 3.00
#04556NZ Plans and Parts Kit 7.25
Parts Kit Only:
#04556N 4.75/Ea, 12.90/3, 38.50/10

WELCOME
A boutique best seller! Not only does it say "welcome", but it plays a Christmas melody with lights blinking in time to the music. About 17" high.
#01570 Plans 4.00
#04570Z Plans and Parts Kit 12.00
#04570 Parts Only: 8.75/Ea, 23.85/3, 68.00/10

Parts Kits include all needed items to complete the project - EXCEPT LUMBER

MERRY CHRIS-MOOSE
Features a push button that plays "Rudolph" with flashing red nose. About 22" wide.

#01574 Plans 3.00 #04574Z Plans & Parts Kit 8.50
#04574 Parts Only: 6.85/Ea, 18.90/3, 57.30/10

CRAFTER'S MART
P.O. BOX 2342-W • GREELEY, CO 80632
72-Page CATALOG: $1, Free with any order. Check, MasterCard or VISA (include daytime phone, card no., exp. date & signature). PROCESSING CHARGE: Continental U.S. $4; AK, HI, APO/FPO $10; Canada $16; Foreign 20% plus $10 (U.S. Funds). CO Res. add 3% tax.
Info: (303) 351-0676 PHONE ORDERS: 8am-5pm Monday-Friday, Mountain Time. **1 - 800 - 999-3445**

ALL-TIME FAVORITE WOOD PLANS

From the editors of Better Homes and Gardens® *WOOD*® Magazine

Adirondack Chair

Sleek and comfortable, here's a classic chair that's easy to build in just a weekend!

Oak Dry Sink

This heirloom-quality piece handsomely stores dishes, flatware, linens, and more.

High Chair

Designed for safety and durability, this chair will retain its good looks through loads of messy mealtimes.

Rocking Horse

Lightweight and sturdy, this rocking horse will please a favorite little one and be passed on for generations.

Dollhouse

This regal fold-up dollhouse packs away in its own handy case when playtime's finished.

Earth Movers

The set of toys includes plans for a bulldozer, grader, front-end loader, lowboy, and tractor—a young road builder's dream.

Porch Swing

Enjoy summer swaying with a sturdy swing, big enough for two adults and held securely with a pair of chains.

Quilt Rack

This graceful quilt rack beautifully displays favorite quilts and blends with nearly any decor.

YES! I want to build these wonderful plans. Please send me the plan(s) I have indicated.

- ☐ Chair
- ☐ High Chair
- ☐ Dollhouse
- ☐ Porch Swing
- ☐ Dry Sink
- ☐ Rocking Horse
- ☐ Earth Movers
- ☐ Quilt Rack

Total enclosed for ___ plans $_____

Mail to: WOOD® MAGAZINE PLANS, P.O. Box 9255, Dept. W63F, Des Moines, IA 50306

Name (Please print)_____

Address_____

City_____

State_____ Zip_____

To order one plan send $9.95 (U.S.); two plans are $9.00 each; three plans are $8.50 each; four or more plans are $8.00 each. Costs include shipping and handling. If applicable, state and local taxes are included in the cost.

PROVEN TECHNIQUES FROM THE SHOP TESTED WOOD MAGAZINE SHOP

100% MONEY-BACK GUARANTEE IF NOT COMPLETELY SATISFIED.

ASK WOOD

Continued from page 87

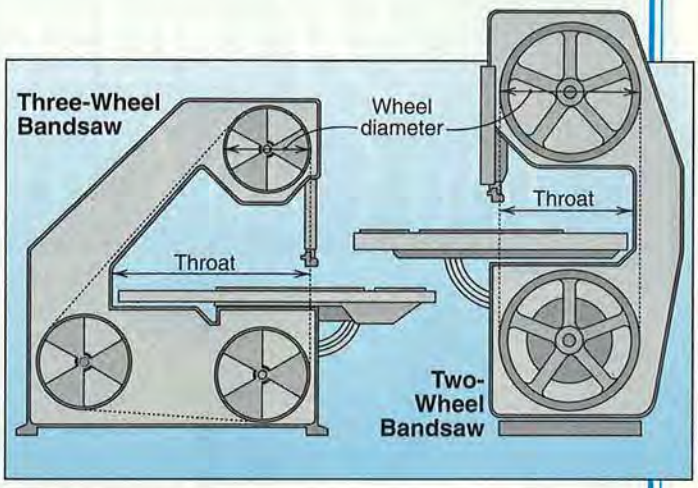
Three-wheel vs. two-wheel bandsaws

I do my woodworking from a wheelchair and see the advantage of the three-wheel benchtop bandsaws. I understand that the three-wheel saws allow for a lower profile machine and a deeper throat. Plus, they cost less than the two-wheel bandsaws. Are there disadvantages I'm overlooking? What are the primary differences other than the obvious additional wheel?

—Allan Ludvigson, Truman, Minn.

You've hit on the main advantages, Allan. But we'll add to that. Three-wheel bandsaws are cheaper because the additional wheel allows for a deeper throat with less cost in frame construction than a two-wheel bandsaw with the same depth. (See the drawing right.*) So, for someone who's looking for depth, the three-wheeler may be the ticket.*

The primary drawback lies in increased blade fatigue which leads to breakage. Lou Brickner, vice president of Delta International Machinery, says, "A blade on a three-wheel saw has to bend 50% more often than the blade on a two-wheel saw, plus the wheels themselves are smaller on the three wheel. The more bending, the more fatigue."



Brickner advises using thinner blades on saws with wheels under 8"-diameter—the size that most three-wheel bandsaws have. "Most standard two-wheel blades are between .018- and .020-inch thick. We recommend going down to .012- or .014-inch thick for three-wheel saws," he says.

In our testing at WOOD® *magazine, we've found thinner blades tend to wobble. For this reason, don't expect the same performance as with a two-wheel bandsaw and a standard blade.*

NEW!

From the Editors of Better Homes and Gardens WOOD Magazine

Pick Up On The Newstand September 14th!

26 All New Projects
- His & Hers Gifts
- Children's Favorites
- Small Furniture With Accents

100 Pages
- Shelftop Showpieces
- Kitchen Accessories
- Much, Much, More!

OR, YES! I WANT TO ORDER TODAY!

MAIL YOUR ORDER TO: WOOD® MAGAZINE
P.O. BOX 9255, DEPT. WD-10
DES MOINES, IOWA 50306

Each magazine is **$4.95** + **$2** Shipping & Handling

_____ (no. of copies) x **$6.95** each = $_____

State and local taxes, if applicable, are included. For Canadian or other foreign orders please add $2.00 for each magazine.

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
Allow 4-6 weeks delivery.

Or Call **800-572-9350** For Visa or MasterCard Orders.
100% Money-Back Guarantee if Not Completely Satisfied.

BUILDING OUR NAME...

BUILDING OUR DREAMS...

UNI. TABLE SAW
TS-2010 10" $1079
TS-1212 12" $1479

PLANER
WP-0012 12" $369
WP-1015 15" $769
WP-0020 20" $1295

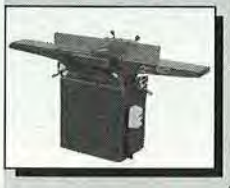
PNEU. DRUM SANDER
FL-901 $259

SANDER
SD-0069 6X9 $189
SD-0612 6X12 $429

WOOD LATHE
CL-1140 40" $569

SHAPER
SP-30 1" $849

4 SIDE MOULDER
SM-0604 6" $25,900



RIP SAW
TRS-0012 12" $8950

DIGIT CONTROL WIDE BELT SANDER
CA-2548 24" $6290
CA-3760 36" $9390

JOINTER
JT-1006 6" $259
JT-1008 8" $639
JT-0012 12" $1895

BAND SAW
BS-0163 16" $499
BS-0183 18" $609
BS-0202 20" $1290

DUST COLLECT
DC-90 1HP $189
DC-101 2HP $299
DC-102 3HP $459

WE SPECIALIZE IN CUSTOMER SATISFACTION

ONE YEAR WARRANTY OFFERING A LINE OF FINE QUALITY MACHINE TOOLS

MAIN OFFICE:
9031 E. SLAUSON AVE.
PICO RIVERA, CA 90660
TEL: (310) 949-3747

ORDER DESK ONLY:
(800) 786-LOBO

CHICAGO:
(708) 798-9229

ATLANTA:
(404) 416-6006

CANADA:
(519) 291-2280

LOBO POWER TOOLS

Holiday Cut-Outs You Can Create with Ease

PLAN 1–SANTA
(4'Height)

PLAN 2–REINDEER
(3'W x 4'H)

PLAN 3–SMALL REINDEER
(med. 28" Height / Sm. 9" Height)

PLAN 4–SLEIGH
(56"L x 35" H)

PLAN 5–ANGELS
(4' Height)

Create a season full of holiday magic by making these easy but impressive projects. For each project, simply cut out the pieces to shape using simple tools, sand, paint and fit together. Full-size patterns for all curved pieces are included. When the season's over, just disassemble and lay the pieces flat for space-saving storage. Projects are easy to paint, use common lumber and require minimal assembly. The experts at WOOD® magazine designed and built each project to assure professional results.

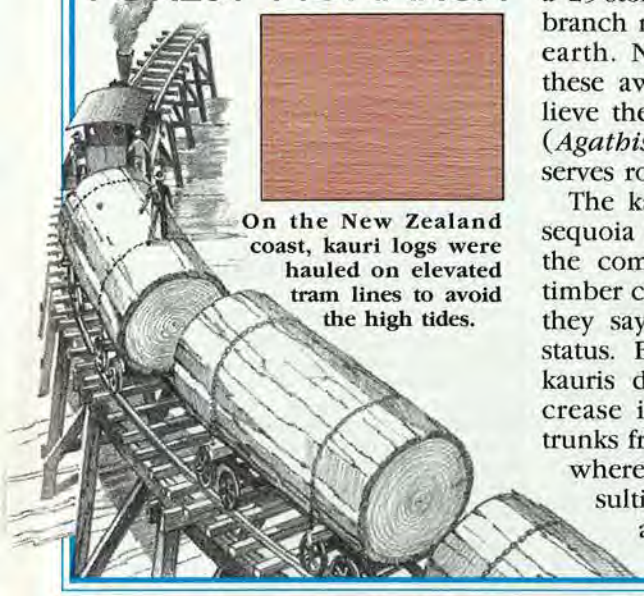
HOW TO ORDER:

Order your holiday project plans today by sending your name, address and the name of the plan(s) you wish to receive, plus a check or money order (U.S.) for **$12.95** for one plan, **$24.00** for two plans, **$33.00** for three plans, **$40.00** for four plans or **$45.00** for five plans (the complete set). Postage and handling plus state and local taxes, if applicable, are included.

Mail to: WOOD MAGAZINE PLANS
P.O. Box 9255, Dept. WD-16
Des Moines, IA 50306

100% MONEY-BACK GUARANTEE IF NOT COMPLETELY SATISFIED.

KAURI
NEW ZEALAND'S FOREST MONARCH



On the New Zealand coast, kauri logs were hauled on elevated tram lines to avoid the high tides.

What tree in all the world could dare challenge the North American giant sequoia as the king of trees? In sheer size, sequoias can amass a girth at their base exceeding 100′ and rise to the height of a 25-story building with the first branch more than 100′ above the earth. New Zealanders bow to these awesome statistics, but believe their favorite son, the kauri (*Agathis australis*), a pine, deserves royal recognition, too.

The kauri can never equal the sequoia in height or girth, but in the combined attributes of size, timber content, and wood quality, they say the tree rates monarch status. Because, unlike sequoias, kauris do not taper as they increase in height. Instead, their trunks frequently *increase* in girth where the branches begin, resulting in 28′ diameters 100′ above the ground!

The kauri thus produces vast quantities of millable heartwood (with no taper, little wood is lost), and the species was marked for lumber production as far back as the early 1800s. Its wood was used for boatbuilding as well as frame-house construction and furniture. And for some time, the sap of the kauri was collected in gum form as the hardening ingredient in paints and varnishes.

Unfortunately, the kauri was truly exploited. Trees died from slashes made in their bark by gum collectors. Kauri forests were leveled for more agricultural land. And vast fires decimated still more standing timber. That's why today most of the country's large kauri trees grow on protected government preserves. Yet, kauri fans still search for the largest tree while old bushmen point to the stumps of past giants.

Illustration: Jim Stevenson

Take-Apart Dalmatians Plan

Cute pups in four playful poses. Projects come apart for compact storage. Plan includes **FULL SIZE** patterns for **all four** puppies plus fire hydrant shown. Approx. 9" high. Order hardware parts below.

#W1188 Take-Apart Dalmatians Plan
.....$7.99/SET

Take-Apart Dalmatians Hdw. Parts

This package contains eight plastic eyes and four red nylon collars to make four Take-Apart Dalmatians. Project plan, wood and paint are **not included.**

#3444 Take-Apart Dalmatians Hdw. Parts
.....$6.99/PKG

HOW TO ORDER: List quantity, part number, item, price & total of order. Include $4.95 shipping & handling per order. MN residents add 6.5% sales tax. Mail check or money order. **Credit card customers call TOLL FREE 1-800-441-9870.**

MEISEL HARDWARE SPECIALTIES
P.O. BOX 70W10 MOUND, MN 55364

Trim along the dotted lines with NordicTrack.

NordicTrack melts unwanted inches away.

Get rid of those "love handles" with a NordicTrack® exerciser.

Research shows that using a NordicTrack can burn more fat than using exercise bikes, treadmills, stairsteppers and other ordinary exercisers that work only your legs.

Plus, by increasing your lean muscle tissue, the NordicTrack exerciser raises your metabolism — the rate at which your body consumes calories.

30-day in-home trial

NordicTrack is easy.

With a NordicTrack you can trim and tone your entire body — including your waistline — in as little as 20 minutes, three times a week.

NordicTrack
A CML Company

©1993 NordicTrack, Inc., A CML Company All rights reserved.

FREE Video and Brochure

Call 1-800-328-5888 **Ext. 08BI3**

or write: NordicTrack, Dept. 08BI3
104 Peavey Road, Chaska, MN 55318

❑ ***Please send me a FREE brochure***
❑ ***Also a FREE VHS videotape***

Name _____
Street _____
City _____ State ____ Zip _____
Phone ( ) _____

Print this article

Worth writing for...

You can get useful ideas and product information by mail. Use the coupon in this section to order your choice of literature listed below. Each company mails the catalogs or information directly to you.

POWER TOOLS

SCROLL SAW, CRAFT & WOODWORKING CATALOG—Specialty products from the exclusive distributors of HEGNER, the precision saws with SCROLLVERGNUEGEN. Complete information on scroll accessories, including blades and lettering guides. Also JET Clamps, HEGNER Lathes, PLANO Vertical Glue Press, and more. Toll-free customer service hotline included! AMI, LTD. $2.00. *Circle No. 3.*

TOOL CRIB CATALOG—Since 1948, woodworkers, homebuilders, industry and schools across the country have looked to the Tool Crib as their source for power tools and equipment. Our prices are low; our sales people are knowledgeable; and our service is first-rate! We stock over 10,000 tools with top name brands like Black & Decker, Delta, Ryobi, Makita, Powermatic, Jet, Freud, Bosch, Porter Cable, Milwaukee and many more. We offer competitive prices with quality service and same day shipping. Send for your NEW 1993 catalog. It's worth it! TOOL CRIB. $3.00. *Circle No. 6.*

TRANSPOWER, CP TOOLS INC.—A fine line of quality woodworking machinery, saws, shapers, planers and more. Send for free catalog. CP TOOLS INC. Free. *Circle No. 15.*

TOOLS AND SUPPLIES—for cabinetmaking, antique restoring, woodturning, wood carving, picture framing, chair caning, marquetry and more—over 4000 products in all are featured in Constantine's 1993 Woodworkers' Catalog. 116 pages, full color, with every product guaranteed to please or your money back. 2 year subscription. CONSTANTINE'S. $1.00. *Circle No. 20.*

ENLON IMPORT CORP. GRAND OPENING—We would like to recognize you as our most important asset. We offer a large selection of fine woodworking machinery, tools and accessories for your business and home workshop. Take advantage of our grand opening specials. Send for catalog. ENLON IMPORT CORP. Free. *Circle No. 35.*

INCA MACHINERY INFORMATION—Complete information on the famous line of Inca woodworking machines. Designed for precision work by the small to medium sized cabinet shop. Used by thousands of hobbyists and professionals. Table saws, bandsaws, joiner/planers, dust collector, radial arm saw. GARRETT WADE CO. Free. *Circle No. 44.*

HOME LUMBER—For the largest selection of Makita at the right price. We also provide great pricing on Amana Carbides, DeWalt power tools, Bostitch Air Nailers & David White Instruments. Same day shipping, free freight. We accept Visa, Mastercard, Discover, COD. Send for information. HOME LUMBER. $1.00. *Circle No. 48.*

LOBO POWER TOOLS—Fine crafted woodworking power tool, top quality, affordable prices. A commitment of customer satisfaction, with a full 1 year warranty. We sell a complete line with many options for our band saws, table saws, planers, jointers, double drum sanders, edge sanders, wide belt sanders, power feeders and many, many more. Send today for a free brochure. LOBO POWER TOOLS. Free. *Circle No. 57.*

GET TO THE FINISH LINE FASTER—with a Performax drum sander. Don't spend hours with a hand-held belt sander. Sand ultra-wide stock ultra-smooth in just minutes. Models start at $300 to $3495. Select the model that fits your budget and your needs. New metal abrasive fasteners keep sandpaper tight without re-wrapping. PERFORMAX PRODUCTS. $1.00. *Circle No. 78.*

HAND LAMINATE & WOODWORKING TOOLS—A new catalog is now available that covers 25 groups of special hard-to-find industrial-quality hand tools. Included are VIRUTEX® slitters, PLASTI-CUT® files, laminate shears, scoring cutters, trimmers, plate joiners, and many more. PRACTICAL PRODUCTS CO. $1.00. *Circle No. 82.*

WOODWORKING TOOLS & ACCESSORIES—While the history of RBIndustries goes back 60 years, this is the first time we've brought together all our precision-made tools and accessories in one catalog. The Hawk Precision Scroll Saw, 4-in-1 Woodplaner, Panel Master Door Machine, Router System, and much more. Quality equipment built here in the heart of America. When you buy from us, you deal directly with the manufacturer. Our prices, quality, and 3 year Warranty reflect our commitment. Send today for FREE information. RB INDUSTRIES, INC. Free. *Circle No. 84.*

SKIL POWER TOOLS—30 page booklet covers the complete line of Skil professional power tools and accessories. Included are saws, cordless drill/drivers, screwdrivers, drills, jigsaws, planes, sanders, routers, sander/grinders and a plate joiner. SKIL. Free. *Circle No. 87.*

SKIL POWER TOOLS—Full color, complete line, power tool catalog. Features cordless screwdrivers, drills and the cordless Skilwrench™. Corded products include circular saws, drills, drywall drivers, sanders, hammer drills, jigsaws, planes, laminate trimmer, sander/grinders, plate joiner, routers, xtra tools, bench top tools and recipro saw. All product accessories are also shown. SKIL. $1.00. *Circle No. 88.*

BENCHTOP POWER TOOLS—The complete line of Skil Benchtop Tools is shown in this six page brochure. Included are: A 10" Table Saw, 16" Scroll Saw, 8" Drill Press, Combination 4" Belt/6" Disc Sander and 5" and 6" Grinders. SKIL. Free. *Circle No. 90.*

TOOLS ON SALE™—A division of Seven Corners Ace Hardware, Inc. offers a catalog of over 400 pages of the most popular brands of power tools available anywhere, all at discounted prices. Included are saws, planers, sanders, routers, drills and more from manufacturers such as Milwaukee, Makita, Porter Cable, Black & Decker, Dewalt, Freud, Bosch, Delta, and many more. Now introducing a full range of Werner brand ladders. Tools on Sale™ division of SEVEN CORNERS ACE HARDWARE, INC. $1.00. *Circle No. 92.*

PORTABLE SAWMILLS—Convert logs into valuable lumber—Wood-Mizer® Products manufactures a line of portable bandsaw mills that allows the novice as well as the experienced sawyer to safely convert standing logs into lumber. Then, with the use of our SolaryDry™ Kiln or Vacu-Kiln™ to dry your lumber, you could increase the value of every board you produce. We manufacture some of the most progressive woodworking equipment on the market today. Product videos available. Send for our 31-page catalog. WOOD-MIZER PRODUCTS. $2.00. *Circle No. 94.*

SERIOUS POWER TOOL CATALOG—16 pages plus a price list containing pictures, specifications and Tepper Discount Tools pricing on Black & Decker Industrial, Bosch, Porter Cable, and Milwaukee portable power tools stocked by Tepper Discount Tools. These are serious tools for the serious tool user. Cost is $1 to cover postage and handling. TEPPER DISCOUNT TOOLS. $1.00. *Circle No. 100.*

HAND TOOLS

PERSONAL BRANDING IRONS—Brochure describes branding irons that enable you to put your name on your work quickly and easily. Made especially for branding wood, they are available with 1, 2, 3 or 4 lines of copy. Changeable date also available. NOVA TOOL CO. $1.00. *Circle No. 160.*

STAINS/FINISHES

ENVIRONMENTALLY SAFE FINISHING—High-solids lacquers, water-based varnishes, HVLP Sprayers, plus water and alcohol soluble stains and environmentally safe strippers are just a few of the 4000-plus products in Constantine's 1993 Woodworking Catalog. 116 pages of woods, veneers, moldings, trims, hardware, tools, books, plans and more—all guaranteed to please or your money back. 2 year subscription. CONSTANTINE'S. $1.00. *Circle No. 210.*

PLANS

SELL WOOD SIGNS—Route, carve, scrollsaw signs and animals for fun and profit. Send $3.00 for pattern samples. Your name set in 2½" high letters included free. (This is not junk). ABC PLANS. $3.00. *Circle No. 303.*

WOODWORKERS' PLANS AND SUPPLIES—Wood projects are simplified with the high quality plans, specialty hardware and other supplies offered by Armor Products. Over 100 plans are available for making toys, desks, clocks, pool tables, lamps, chests, and other furniture. Movements, dials, moldings, ornaments, dollhouse kits, door harp supplies and tuning pins are also available. ARMOR PRODUCTS. $1.00. *Circle No. 315.*

GARDEN & PORCH FURNITURE—The Best of the Best Classical Garden Furniture plans and kits available in Mahogany or Cypress wood. These pieces have been proven sellers for their classic designs and timeless appeal. Send today for our catalog. CLASSIC FURNITURE, INC. $1.00. *Circle No. 325.*

SALES TESTED DESIGNS—available as plans only, parts kits, or plans and parts kits. Complete stock of parts, tools and supplies. Door Harps to Digital Electronic/Wood Projects. Full size plans! Catalog. CRAFTER'S MART. $1.00. *Circle No. 328.*

FURNITURE PLANS & HARDWARE KITS CATALOG—Save time, save money. Choose from a growing selection of plans for small projects to large furniture. Buy the plans only, or the complete hardware kit including hard to find molding, hardware, and brass glass. Plans include desks, entertainment centers, hutches, and more. Full size patterns where necessary. You provide the wood, we provide everything else you need. DREAMWOOD. $1.00. *Circle No. 342.*

FULL-SIZE FURNITURE PLANS CATALOG—Illustrates and describes over 200 plans for making furniture of quality found in museums and fine furniture stores. Plans include rolltop desk, cradles, dining tables, chairs, buffets, chests, gun cabinets, poker table, children's furniture, rocking horse, spinning wheels, and more. Bill of materials exploded drawings assist the woodworker. FURNITURE DESIGNS, INC. $3.00. *Circle No. 345.*

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 94

THE GIZZMO FACTORY—presents 3 unique birdhouse designs for the intermediate skill level craftsman. The Castle, The New England Church, & The Airplane Hangar. Complete working drawings, cutting details, sequential assembly drawings with photos. Step by step instructions. Send $1.00 for photo and information packet. THE GIZZMO FACTORY. $1.00. *Circle No. 360.*

WOOD PLANS AND PRODUCTS!—Our catalog is a compilation of hard-to-find products and projects we have found to be of the best quality and value for the woodworking enthusiast. Send 50¢ for catalog. LACK WOOD PRODUCTS. 50¢. *Circle No. 395.*

PROJECT PLANS—Full-size patterns for over 500 easy-to-build woodworking projects. Nation's leading source for scroll saw patterns, cow projects, toy plans, yard ornaments, wood furniture, etc. Over 3000 hard-to-find specialty items. Send for your big new 80-page catalog. MEISEL HARDWARE SPECIALTIES. $2.00. *Circle No. 401.*

NEW DESIGNS, LAWN FURNITURE, GARDEN STRUCTURES, NEW COLOR CATALOG—Just completed rose arbor archway with seats and planters, mystic wishing well with running water, unique planters and bench combo and a beautiful garden bridge. Walk through octagon & hexagon picnic tables, patio chairs, rockers, swings, adirondack furniture, jungle gym and other real fun projects. Easy to follow plans, materials list, step by step instructions. Excellent business opportunity. SPECIALTY FURNITURE DESIGNS. $2.00. *Circle No. 445.*

WOOD TOY PATTERNS—Patterns for all ages including children's patterns and executive toys. New catalog has many new patterns to choose from including parts and wheels. Send for new catalog and receive a coupon for free wheels and axle pegs. TOYS AND JOYS. $1.00. *Circle No. 465.*

LUMBER

QUALITY EXOTIC LUMBER/TURNING WOODS—We offer a comprehensive selection of fine quality exotic woods. Also available are mechanisms for making wooden barrel pens/pencils/roller balls/ fountain pens. Ebony, Kingwood, Tulipwood, Snakewood, African Blackwood, Cocobolo, Bloodwood, Figured Maple, Spaulted Maple, Padauk, etc. Unique and unusual turning woods and burls are also available. Send for catalog. BEREA HARDWOODS. $1.00. *Circle No. 510.*

ONE STOP WOOD SHOP—Domestic and exotic hardwood plywood and lumber, marine plywood, over 30 species in stock—all under one roof. Custom cutting services to your exact specifications with little or no waste at competitive prices! We specialize in bundling and shipping. Send for catalog. BOULTER PLYWOOD CORP. Free. *Circle No. 512.*

MORE THAN 4000 WOODS,—veneers, inlays, carvings, legs, pegs, tools, mouldings, finishes, decorative hardware, plus books, plans and more—everything for people who work with wood! Constantine's 181 years of woodworking experience make it the catalog woodworkers rely on; their 60-day money-back guarantee is your assurance of 100% satisfaction. 2 year subscription. CONSTANTINE'S. $1.00. *Circle No. 515.*

FINE KILN DRIED HARDWOODS—For crafts, cabinet and furniture makers. Price list and newsletter have lumber species and retail prices of dowels, lumber and finishing products. No minimum order. Lumber available surfaced or unsurfaced shipped by UPS. Send for price list and newsletter. HARTWOOD LTD. Free. *Circle No. 547.*

STEVE H. WALL LUMBER CO—Quality hardwoods and woodworking machinery for the craftsman and educational institutions. 16-page catalog lists 17 species of popular hardwoods at wholesale prices. Also dealers for MiniMax, Freud and ProCut woodworking machines. STEVE H. WALL LUMBER CO. $1.00. *Circle No. 592.*

EXOTIC IMPORTED AND DOMESTIC HARDWOODS—Over 75 species of lumber, bowl blanks, turning squares and veneer. Samples (½" x 3" x 6") ideal for craftsmen, furniture and cabinet makers, architects, and designers available. Catalog provides common and botanical name, source, and description of each wood. Send for catalog. WOODWORKERS SOURCE. $1.00. *Circle No. 598.*

VIDEOS

LAGUNA TOOLS VIDEO—Learn why most European workshops are using a central machine center rather than separate machines. 90 min. video presentation of "The Intelligent One Man Shop. The Robland X 31". Send for video. LAGUNA TOOLS. $6.00. *Circle No. 615.*

GENERAL WOODWORKING CATALOGS

EVERYTHING FOR THE WOODWORKER—Wide selection of woodworking supplies, including candle cups and shaker pegs. Price of catalog is refundable with order. BENNY'S WOODWORKS. $1.00. *Circle No. 810.*

CONSTANTINE'S 181ST ANNIVERSARY CATALOG—is packed with woods, veneers, tools and supplies. Choose veneers in more than 81 varieties... inlays, overlays, hardwoods, moldings, trims, caning supplies, finishes, hardware, and tools, tools, tools! Over 4000 products, illustrated in full color and guaranteed to please or your money back. 2 year subscription. CONSTANTINE'S. $1.00. *Circle No. 820.*

THE WOODTURNERS CATALOG—48 color pages of the finest woodturning tools, machinery and supplies available. Featuring Henry Taylor, Sorby, Richard Raffan and Dale Nish workshops. Catalog price refunded with order. CRAFT SUPPLIES USA. $2.00. *Circle No. 830.*

MASTER TOOLS CATALOG—1992-93 236-page master woodworking tools catalog. Full line of the best hand tools, power tools & accessories, machinery, glues, finishing supplies, workbenches, and much more. Hundreds of books included. All four-color. Lots of technical information. GARRETT WADE CO. $4.00. *Circle No. 855.*

GRIZZLY IMPORTS, INC.—1993 is our 10th year of providing woodworkers with an incredible selection of machines, tools and accessories at prices you can afford. Send for your free 1993 catalog today and celebrate with tremendous savings on all your woodworking needs. GRIZZLY IMPORTS INC. Free. *Circle No. 860.*

COMPLIMENTARY TOOL CATALOG—Woodcraft offers over 4,000 of the finest quality woodworking tools, books, supplies, and cabinetry hardware in our complete full color catalog. Craftsmen, cabinetmakers, carvers, woodturners, and hobbyists have depended on Woodcraft since 1928. Backed by Woodcraft's unconditional guarantee. Free technical assistance. WOODCRAFT SUPPLY CORP. Free. *Circle No. 955.*

THE WOODWORKERS' STORE CATALOG—New! The Woodworkers' Store 1992-93 catalog with over 150 new items features 100 full color pages of domestic and exotic hardwoods, veneers, wood parts, specialty hardware, kitchen accessories, finishing supplies, tools, books, and plans... Many exclusive items and hard to find specialties. Orders shipped in 24 to 48 hours. Over 37 years in business! Satisfaction guaranteed. Catalog. THE WOODWORKERS' STORE. $2.00. *Circle No. 965.*

KITS

OUR QUEEN ANNE FURNITURE KITS—are ready to assemble and finish. They include dining room table, chairs, hutch, sideboard, a variety of occasional tables, and a personal desk. All are made in solid cherry, oak, walnut, and mahogany. We also stock individual Queen Anne legs for every project. Complete information in our brochure packet. ADAMS WOOD PRODUCTS. Free. *Circle No. 1002.*

DO-IT-YOURSELF KITS—Choose from a large selection of grandfather, wall and mantel clocks, as well as elegantly styled accent furniture pieces. Kits are made of solid ¾" hardwoods, primarily cherry, oak, and black walnut. Buy direct from the factory and save. Send for 36 page color catalog. EMPEROR CLOCK CO. $1.00. *Circle No. 1030.*

CANOES—Are you looking for a unique Do-It-Yourself Project? Are you tired of incomplete, hard to understand instructions? Then look no further. Build a beautiful Cedar Strip Canoe following our complete instructional video. All you need are simple tools, 60–80 hours and basic woodworking experience. Send for brochure. PALEO CANOE. 50¢. *Circle No. 1083.*

BUCKBOARD BENCH KIT—Kit includes, steel springs that give a little, metal arms and back rails, hardware, and complete instructions. Also available kit with oak parts cut to size. Send for information. THE ROUDEBUSH CO. 50¢. *Circle No. 1085.*

PUBLICATIONS

WOODTURNERS! THE AMERICAN ASSOCIATION OF WOODTURNERS CAN HELP YOU!—Join over 3,600 woodturners who are already members. You will receive: a quarterly journal filled with woodturning articles, tips, and projects; a directory of AAW members, local chapters, instructors, and suppliers; information about national symposiums. Send for information. AMERICAN ASSOCIATION OF WOODTURNERS. $1.00. *Circle No. 1110.*

SHOP ACCESSORIES

ECON-ABRASIVES—manufactures abrasive belts up to 52" wide in any grit. We carry hundreds of woodworking related accessories including: Velcro® backed discs, bar clamps, wood glue, drawer slides, chisels, hinges and hundreds of sanding accessories. Send for our 1992 catalog. ECON-ABRASIVES. Free. *Circle No. 1229.*

EXCALIBUR T-SLOT SAW FENCE—& Companion Sliding Saw Table are designed as a complete system to provide greater accuracy from your table saw. Features quick, easy installation, fits all table saws. Fence locks on both front & rear guide rails. Fence always stays parallel to the saw blade. Dual measuring scales. More features & accessories than other systems. Send for free information. EXCALIBUR MACHINE & TOOL. Free. *Circle No. 1233.*

EASY DOES IT—with HTC'S power tool accessories. Discover many unique items, designed only with you, the dedicated woodworker, in mind. Make your machinery safer, increase the working area of your shop and accomplish nearly impossible tasks easily, quickly, accurately. Full-line catalog and price list. HTC PRODUCTS, INC. Free. *Circle No. 1245.*

ROUTER SPEED CONTROL—Reduces speed electronically without reducing torque. Route at the speed that gives best results with the wood and bit you are using. Speed adjustable from full speed to 0 RPM. Less tear out—stops burning—less wear on bits—easy to use. Send today for information. MLCS LTD. Free. *Circle No. 1251.*

PLYMATE SAW GUIDE—Easier to use than any other guide on the market. The guide that delivers straight, accurate cuts the first time. For use with a circular saw when cutting large pieces of plywood & sheet materials. Free literature. OLIVE KNOT PRODUCTS. Free. *Circle No. 1262.*

SAND-RITE CONTOUR SANDER—Unlimited in their use throughout the woodworking industry. Air-inflated drum conforms to the shape of the work. Eliminates tedious hand sanding. Catalogue. SAND-RITE MFG. CO. Free. *Circle No. 1274.*

"EVERYTHING FOR YOUR ROUTER CATALOG"—Professional quality tables, fences, router bits, acrylic and phenolic plates, jigs, biscuit joinery, mortise machines plus booklets and videos. Buy direct from the manufacturer and save on quality American made tools. WOODHAVEN. Free. *Circle No. 1290.*

BITS, BLADES, CUTTING TOOLS

CASCADE TOOLS—The 1993 Cascade Tools catalog is the finest ever. It's jammed with great buys on SY brand industrial-grade router bits, shaper cutters and an excellent assortment of hard-to-find accessories. You'll have to see it to believe it. CASCADE TOOLS, INC. Free. *Circle No. 1315.*

FREUD—Premier line of carbide-tipped sawblades, router bits, shaper cutters and other woodworking tools, Freud offers a full-line on anti-kickback carbide-tipped router bits. Send for a free new router bit catalog. FREUD. Free. *Circle No. 1321.*

SUPER-SMOOTH, EXTRA-DURABLE, CARBIDE-TIPPED CIRCULAR SAW BLADES—Get a smooth-as-sanded surface with our all-purpose 40-tooth Woodworker Blade. You will be able to rip and cross-cut 1 – 2 in. rock hards and soft woods with an unbelievably smooth finish. You will also be able to cross-cut oak and birch ply-veneers with no bottom splinters. Send today for our information pack. FORREST MFG. CO., INC. $1.00. *Circle No. 1322.*

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 94

PRODUCTION QUALITY CARBIDE TIPPED ROUTER BITS—MLCS Ltd. has a new 32-page catalog featuring hundreds of high quality carbide tipped router bits, shaper cutters, the Router Speed Control, the "Merle Adjustable Corner Clamp," plus other Professional Woodworking Products. Prices 50% to 70% lower than elsewhere. Value, quality and prompt service guaranteed! MLCS LTD. Free. *Circle No. 1350.*

MAGNATE—provides a full line of affordable carbide tipped router bits and shaper cutters. Send for FREE new 1992-93 catalog. MAGNATE. Free. *Circle No. 1355.*

HARDWARE/WOOD PARTS

CHERRY TREE TOYS CATALOG—68 pages of plans, parts, kits and supplies for All Skill Levels. Clocks, whirligigs, dollhouses, door harps, banks, and many more attractive items—plus wooden dowels, pegs, wheels, knobs, & more. Tools, paint supplies, stencils, stamps and much more! Bulk prices available. Catalog. CHERRY TREE TOYS. $1.00. *Circle No. 1420.*

HARDWARE CATALOG—A unique 48-page catalog of the very finest in classic, traditional solid brass cabinet hardware. All of British or No. American manufacture. Double & single post handles, knobs, escutcheons, standard & specialty hinges, box hardware, brass screws, castors, latches, catches, locks, and more. GARRETT WADE CO. $3.00. *Circle No. 1427.*

INCOME OPPORTUNITIES

MAKE MONEY IN FURNITURE RESTORATION THE MINUTEMAN WAY—Earn $200-$1000 per day stripping, repairing, refinishing, mirror resilvering, and/or veneering, at home or in shop, spare time or full time. We provide complete training; no experience necessary. Free workshop teaches you latest in furniture restoration. You have to see it to believe it! Business preview video $19.95. Send for catalog. MINUTEMAN. $2.00. *Circle No. 1661.*

MISCELLANEOUS

MECHANISMS FOR MAKING WOODEN BARREL PENS—Pencils/Roller Ball Pens/Fountain Pens. High quality. Low prices. Wholesale/Retail. Plus other related items. BEREA HARDWOODS CO. $1.00. *Circle No. 1900.*

DELPHI STAINED GLASS—80-page color catalog of stained glass and related supplies. Beveled glass, hard-to-find tools, hundreds of unique patterns, kits, books, videos, and lots more. For 18 years, we've supplied both hobbyists and professionals with quality products, friendly advice, and fast 24-hour shipping. All products guaranteed 100%. DELPHI STAINED GLASS. $4.50. *Circle No. 1920.*

SHOP POCKETS—The Shop Pockets Work Vest is the creative and practical answer to the age old problem of having everything where you need it, when you need it. Unlike expensive tool belts, Shop Pockets will not spill its contents when bending or stooping, and its lightweight, comfortable design provides our exclusive removable pockets. The removable pockets allow storage of tools and accessories when not in use and the usage of only the items needed for any job. No more bulky vests or belts for light jobs—take only the tools necessary to get the job done! It's so simple, yet unique to the Shop Pockets design. Send for brochure. FANTECH. Free. *Circle No. 1925.*

ROLL-TOP COVER—QUICK & EASY! The Roll-Top Cover instantly rolls out to keep contents dry and secure. When not required it rolls into its small 9½" storage canister for carrying tall loads. The full length handle can be easily operated with *one hand* from either side of the truck. Send for brochure. PACE-EDWARDS CO. $1.00. *Circle No. 1985.*

HI-TECH ENGRAVING—You don't have to be an artist with the System One High Speed Engraver (400,000 RPM). The incredible high speed combined with SCM's exclusive stenciling system allows you to produce professional results. You can engrave on wood, glass, metal, stone, ceramic, egg shell. It's as easy as writing with a pen. Send for information. SCM ENTERPRISES. $1.00. *Circle No. 1990.*

STEELMASTER BUILDINGS—are available in almost any size for almost any use. From 10' to 100' wide and any length imaginable. Whether you need a back yard shop... an industrial shop... equipment storage building... whatever your requirements, you'll find a Steelmaster that's just the right size for the job. Our buildings are so easy to construct, most owners opt to construct their buildings themselves which adds up to even bigger savings. Send for information. STEELMASTER. $1.00. *Circle No. 2030.*

IF YOU ARE INTERESTED IN RESTORING ANTIQUES—this 264-page catalog packed with unusual, hard-to-find items is just for you. Included are hundreds of essential items for antique restoration including top quality brass reproduction hardware, oil lamps and accessories, numerous wood component repair parts and kits, caning and basketry supplies, everything needed for wood refinishing, related tools, books, and a complete line of upholstery equipment and supplies. All at wholesale prices. Send for this informative catalog. VAN DYKE'S RESTORERS. $1.00. *Circle No. 2077.*

LEGAL IVORY—Virtually identical to animal ivory, Tagua is the nut from a tropical palm tree. Ideal for jewelry, knobs, small turnings, inlay, or scrimshaw. Available in 3 sizes. Send for information. WOODWORKERS SOURCE. Free. *Circle No. 2090.*

***THE WOODWORKING SHOWS* MACHINERY, TOOLS AND SUPPLIES**—Hundreds of products for the woodworker demonstrated and sold at discount prices at every *Woodworking Show*. In-depth seminars and free workshops on a variety of woodworking topics. Shows are scheduled in 27 cities. Send for free brochure. *THE WOODWORKING SHOWS*. Free. *Circle No. 2095.*

CARVING SUPPLIES

WOODCARVING TOOLS—Whittlers and carvers—Warren Tool Co., Inc. offers a complete catalog of whittling and carving, hand tools, sharpening aids, wood cut-outs, and related wood carving supplies. WARREN TOOL CO., INC. $1.00. *Circle No. 2185.*

CLAMPS

NON-MARRING ADJUSTABLE HAND CLAMPS—BTM has introduced a new line of reinforced polymer workholding clamps. All models feature large bearings for long life. The clamps are extremely lightweight, yet very strong and fully adjustable. Most models are bench mountable. The polymer clamps can be immersed in water, even at the boiling point. The clamps won't rust and are resistant to most acids and chemicals, as well as electrically non-conductive. Made in the U.S.A. Send $2.00 for a complete brochure (refunded with order). BTM CORPORATION. $2.00. *Circle No. 2210.*

MERLE ADJUSTABLE CORNER CLAMP—Quick & easy to use. It forces your work into square. Fully adjustable from 2⅜" x 2⅜" to 69" x 69" in. Perfect for clamping picture frames, cabinets, or anything that requires 90° corner clamping. The Merle Clamp is cast aluminum & steel construction, a true industrial quality tool. Send today for information. MLCS LTD. Free. *Circle No. 2250.*

CLOCKS

KLOCKIT'S FREE 64-PAGE COLOR CATALOG—is packed with the largest selection of beautiful wood clock kits for all skill levels, a huge selection of quartz and mechanical clock movements, dials and accessories, turned wood parts, music movements, tools and much more for the craftsman! KLOCKIT. Free. *Circle No. 2335.*

FASTENING PRODUCTS

DOUBLE 'T' FASTENER—Blind fastener used for quick wood joints—attach trim/molding no nail holes to fill, used in place of dowels or biscuits in edge and butt joining. Unique design holds many joints without clamping. Fastener is set with a special tool then pieces are pressed or hammered together. Fast-Easy-Permanent! GIFTS OF CREATION FASTENER DIV. 50¢. *Circle No. 2435.*

SQUARE DRIVE SCREWS—Thousands agree—once you try them you will never want to use anything else! The square drive recess virtually eliminates work-damaging driver bit "cam-out," the deep threads result in exceptional holding power, and they are heat treated for strength. Sizes from #4 x ⅜" to #12 x 4", with stainless steel, solid brass, brass plated, and zinc plated available. Quantity discounts. Send for literature. McFEELY HARDWOODS. $1.00. *Circle No. 2450.*

Worth writing for...

Better Homes and Gardens®
WOOD Magazine, September 1993
Dept. SEWO93
P.O. Box 2713
Boulder, Colorado 80329–2713

TO ENSURE PROMPT HANDLING OF YOUR ORDER FOLLOW THESE INSTRUCTIONS:

- **Circle your choice**
- **Enclose check or money order for cost of booklets plus $2.00 service charge (no stamps accepted)**
- **NO FOREIGN ORDERS ACCEPTED**
- **Send coupon and remittance to address above**
- **ALLOW 4-6 WEEKS FOR DELIVERY**
- **Coupon expires October 12, 1994**

WOOD SUBSCRIPTION

1. A 1 year WOOD subscription (9 issues) for $25.00 (U.S. price)—a $19.55 savings off newsstand rate. Allow 6-8 weeks for first issue. Be sure to include payment with total below. NO FOREIGN ORDERS ACCEPTED ON THIS COUPON; please contact Subscription Dept. directly.

Circle numbers below corresponding to items in this issue. Please include $2.00 for handling charge.

3.....$2.00	88.....$1.00	345.....$3.00	615.....$6.00	1110.....$1.00	1355 .....Free	2095 .....Free
6.....$3.00	90 .....Free	360.....$1.00	810.....$1.00	1229 .....Free	1420.....$1.00	2185.....$1.00
15 .....Free	92.....$1.00	395.....50¢	820.....$1.00	1233 .....Free	1427.....$3.00	2210.....$2.00
20.....$1.00	94.....$2.00	401.....$2.00	830.....$2.00	1245 .....Free	1661.....$2.00	2250 .....Free
35 .....Free	100.....$1.00	445.....$2.00	855.....$4.00	1251 .....Free	1900.....$1.00	2335 .....Free
44 .....Free	160.....$1.00	465.....$1.00	860 .....Free	1262 .....Free	1920.....$4.50	2435.....50¢
48.....$1.00	210.....$1.00	510.....$1.00	955 .....Free	1274 .....Free	1925 .....Free	2450.....$1.00
57 .....Free	303.....$3.00	512 .....Free	965.....$2.00	1290 .....Free	1985.....$1.00	
78.....$1.00	315.....$1.00	515.....$1.00	1002 .....Free	1315 .....Free	1990.....$1.00	
82.....$1.00	325.....$1.00	547 .....Free	1030.....$1.00	1321 .....Free	2030.....$1.00	
84 .....Free	328.....$1.00	592.....$1.00	1083.....50¢	1322.....$1.00	2077.....$1.00	
87 .....Free	342.....$1.00	598.....$1.00	1085.....50¢	1350 .....Free	2090 .....Free	

Name (please print)_____
Address_____
City_____
State_____ Zip Code_____
Phone (Optional): ___ _____

I AM ENCLOSING:

$_____ for priced items
$ 2.00 for handling
$_____ total remittance

ORDER 1-800-328-0457 MAIL ORDER HOURS M-F 7:00-5:30 C.S.T. SAT 8:00-1:00

DELTA TOOLS

Model	Description	List	Sale
23-700	Wet/Dry Grinder	234	168
23-680	6" Bench Grinder 1/4 HP	86	75
23-880	8" Bench Grinder 1/2 HP	151	115
11-950	8" Drill Press	199	144
31-050	1" Belt sander 2.0 amp	104	78
31-460	4" Belt/Disc Sander	198	135
31-340	1" Belt/8" Disc Sander	268	198
31-080	1" Belt/5" Disc Sander	134	94
40-560	16" 2 speed Scroll Saw	266	178
11-990	12" Bench Drill Press	276	224
11-090	32" Radial Bench Drill Press	399	294
43-355	3/4" Shaper 1-1/2 HP	964	709
43-505	1/2" Bench Router/Shaper	399	279
22-540	12" Bench Top Planer	595	398
36-220	10" Compound Mitre Saw	350	239
28-180	Bench Band Saw	232	165
40-640	20" Bench Scroll Saw	466	318
37-070	NEW 6" v/spd Bench Jointer	330	255
14-600	Hollow Chisel Mortiser	668	448
46-700	12" Wood Lathe	548	438
34-761	10" Unisaw 1-1/2 HP	1715	1395
33-990	10" Radial Arm Saw	818	615
37-280	6" Motorized Jointer	488	395
50-179	3/4 HP 2 stage Dust Collector	483	335
70-200	20" Floor Drill Press	1049	810
33-055	8-1/4" Sawbuck comp w/legs	865	595
34-330	8-1/4" Table Saw 13A	343	234
32-100	Station Plate Jointer	645	258
36-040	8-1/4" Compound Mitre Saw	224	159
34-915	30" Unifence	385	239
34-897	50" Delta Unifence	525	285
36-755	10" Tilt Arbor Saw	1264	925
34-444	Contractors Table Saw	850	615
17-900	16-1/2" Floor Drill Press	495	395
40-601	18" Scroll Saw with stand	942	745
22-662	13" Planer complete - 2HP	1499	1168

Planer has **$75.00 rebate**-price is before rebate

33-060	NEW "Sidekick" Miter Saw	499	375
14-070	NEW 14" Floor Drill Press	450	345
50-075	Dust Collector/Sweeper 3/4 HP	360	245

The following Delta tools have a $50.00 rebate! Price shown is before rebate.

28-283	14" Band Saw w/enc. stand	910	735
34-445	34-444 Saw w/30" Unifence	1200	775
37-154	DJ15 6"Jointer w/3/4HP motor	1420	1095

MILWAUKEE TOOLS

6527	NEW Sawzall with case	309	172
6528	above Sawzall w/wired cord	305	172
6125	NEW 5"Random Orbit Sander	200	119
6126	NEW 6"Random Orbit Sander	205	125
0399-1	12V cordless Drill Kit comp	309	165
0402-1	above Drill w/keyless chuck	314	174
0395-1	9.6V cordless Drill with case	284	158
0224-1	3/8" Drill 4.5 amp magnum	215	114
0234-1	1/2" Drill 4.5A mag 0-850 rpm	229	119
0244-1	1/2" Drill 4.5A mag 0-600 rpm	229	123
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	189	107
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	186	104
0375-1	3/8" close quarter Drill	229	132
0379-1	1/2" close quarter Drill	260	145
6546-1	cdls Scrwdvr 200 & 400 rpm	138	82
5399	1/2" D-hdle Hammer Drill Kit	325	188
6750-1	Drywall Gun 0-4000 5 amp	168	95
6507	Original SawZall with case	259	144
6014	Orbital Sander 1/2 sheet	214	119
8977	variable temp. Heat Gun	128	77
5397-1	3.8" var. spd Hammer Drill Kit	250	142
5371-1	1/2" var. spd Hammer Drill Kit	375	185
3107-1	1/2" v/spd right angle Drill Kit	385	209
6754-1	Drywall Gun 0-4000 5.4 amp	192	108
3300-1	1/2" var. spd right angle Drill	339	189
5680	Router 2 HP - 12 amp	355	198
0235-1	1/2" Drill w/keyless chuck	229	129
6145	4-1/2" Grinder 10,000 rpm	165	99
6142	6145 with case & accessories	204	129
6749-1	Drywall Gun 0-2500 5.4 amp	224	122
6365	7-1/4" Circular Saw 13 amp	214	122
6366	6365 w/fence & carbide blade	224	127
6368	6365 w/fnce,carb. blde,& cse	244	139
6377	7-1/4" Worm Drive Saw	324	178
6256	Top Handle Jig Saw	259	145
6490	10" Mitre Saw	444	269

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10" 40	69	39
LU82M010	Cut-off 10"	60	93	49
LU84M011	Comb 10"	50	78	42
LU85M010	Super Cut-off	10" 80	115	59
LM72M010	Ripping 10"	24	69	39
LU73M010	Cut off 10"	60	84	45
LU87M010	Thin Kerf 10"	24	72	39
LU88M010	Thin Kerf 10"	60	88	48
LU98M010	Ultimate 10"	80	128	68
LU91M010	Compnd Mitre 10"	60	88	54
TK303	7-1/4" Finishing	40	38	23
TK306	10" Finishing	40	47	28
TK906	10" Combo	50	53	30
SD306	6" Dado - Carbide		215	112
SD308	8" Dado - Carbide		230	119
F0	1-3/4" x 5/8" Biscuit 1000 Qty		43	29
F10	2-1/8" x 3/4" Biscuit 1000 Qty		43	29
F20	2-3/4" x 1" Biscuit 1000 Qty		45	29
FA	Assorted Biscuits 1000 Qty		45	29
FB100	16 piece Forstner Bit Set		338	184
94-100	5 pc. Router Bit Door System		320	163

The following FREUD Tools have a $30.00 rebate! Price shown is before rebate - Expires 10/31/93

FT2000E	3-1/4 HP v/spd Plunge Router	410	205
JS100	Biscuit Jointer with case	334	162

MAKITA TOOLS

Model	Description	List	Sale
6070DW	3/8" v/spd Reverse Drill 7.2V	128	74
6071DWK	above Drill w/removable batt.	203	110
5090DW	3-3/8" Saw Kit 9.6 volt	262	154
6010SDW	3/8" cordless Drill Kit 7.2V	99	59
ML900	Incandescent Flashlight 9.6V	Sale	37

6012HDW	2 speed Drill w/clutch-comp.	243	129
6092DW	v/spd Drill kit - no clutch	257	138
6093DW	v/spd Drill w/clutch-complete.	261	139
6093DWE	6093DW Drill Kit w/2 batteries	270	145
6095DW	6093DW Kit w/keyless chuck	278	135
6095DWE	6095DW Drill Kit w/2 batteries	270	148
6011DW	NEW 12V Drill Kit complete	330	175
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28

5007NBA	7-1/4" Saw w/electric brake	255	129
5008NBA	8-1/4" Saw w/electric brake	316	189
B04510	1/4 sheet Pad Sander	97	54
9900B	3" x 21" Belt Sander w/bag	297	152
9924DB	3" x 24" Belt Sander w/bag	313	159
4301BV	Orb. var. spd Jig Saw 3.5A	275	162
JR3000V	var. speed Recip Saw w/case	250	128
LS1020	10" Mitre Saw 3.5 amp	599	339
9820-2	Blade Sharpener	394	209
1900BW	3-3/4" Planer with case	232	129
1911B	4-3/8" Planer 7.5 amp	267	139
9207SPC	7" Sander/Polisher	308	245
9514B	4" Disc Grinder 4.6 amp	104	65
3601B	1-3/8 HP Router	274	158
B04550	1/4 sheet Pad Sander w/bag	94	54
DA3000R	3/8" Angle Drill	299	155
2708W	8-1/4" Table Saw	544	289
2711	10" Table Saw with brake	911	558
6404	3/8" Drill Rev. 0-2100 rpm 2 A	108	59
6510LVR	3/8" Drill Rev. 0-1050 rpm	156	86
6820V	0-4000 rpm Drywall Gun 5.2 A	167	92
6013BR	1/2" Drill Rev. 6 amp	265	136
5402A	16" Circular Saw 12 amp	708	395
3612BR	3 HP Plunge Router	364	169
9401	4" x 24" Belt Sander w/bag	360	205
4302C	var. speed Orbital Jig Saw	297	189
5077B	7-1/4" Hypoid Saw	273	138
LS1030	NEW 10" Mitre Saw	428	195
5007NB	7-1/4" Circular Saw 13 amp	225	116
2012	12" Portable Planer	959	465
LS1011	10" Slide Compound Saw	870	498

SIOUX TOOLS

8030	New 3/8" var/spd Drill	238	139
8000	3/8" var/spd close qtr Drill	201	123
690	5" Air Random Orbit Sander	139	138
690VV	690 w/venturi dust collection	281	178
658	5" Air Rndm Sander-dual action	261	155

SENCO AIR NAILERS

SFN1	Finishing Nailer 1" - 2"	377	259
SFN2	Finish. Nailer 1-1/2" - 2-1/2"	571	378
SN325	Nailer 1-7/8" - 3-1/4"	665	425
SN4	General purpose 2" - 3-1/2"	685	468
SLP20	New Pinner w/cse 5/8" - 1-5/8"	399	269
SKS	Stapler 5/8" - 1-1/2"	351	248
N70	NEW HD Framer 2" - 3-1/2"	625	479

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	348
N12B-1	Coil Roofing Nailer	845	399
N60FN-2	Finishing Nailer	625	355
T31	Brad Nailer	270	145
CWC100	1 HP Pancake Compressor	445	289

EXCALIBUR Fences & Tables

TT45R24L9	24" Fence	369	299
TT45R50L12	50" Fence	399	318
EXSLT30	Sliding Table	599	475
EXSLT60	Sliding Table	745	585

SKIL SIZZLERS

77	7-1/4" Worm Drive Saw	257	144
2735-04	12 volt cordless Drill Kit	249	132
2735-04X	2735-04 with keyless chuck	269	135
1605-02	NEW Biscuit Jointer w/case	221	129
3400	10" Table Saw - Bench Top	270	179
3330	16" Scroll Saw - Bench Top	205	135

PANASONIC CORDLESS

EY6205BC	NEW variable speed 12 volt Drill w/15 minute charger & case	390	179
EY6281BC	NEW variable speed 9.6 volt Drill w/15 minute charger & case	350	168
EY571BC	EY571B with case & 2 batt	275	155
EY6207BC	NEW 12 volt 1/2" Drill w/keyless chuck var. speed w/15 minute charger & case	421	216
EY6205EQK	Same as EY6205BC but battery has 40% more life & 20% more torque	368	189

PASLODE IMPULSE GUNS

IM250	Trimpulse Finish Nailer Kit	849	615
IM325	Impulse Framing Nailer Kit	849	615

HITACHI TOOLS

C7BD	7-1/4" Circular Saw with brake	235	118
M12V	NEW 3 HP var. speed Router	477	225
TR12	Plunge Router 3 HP	355	169
F1000A	12" Planer/6" Jointer	2835	1650
C10FA	10" Deluxe Mitre Saw	553	268
C12FA	NEW 12" Mitre Saw	632	298
C8FB	8-1/2" Slide Compound Saw	1026	465
FREUD LU91M008	8-1/2" Carb bld 48 t	68	43
C15FB	15" Mitre Saw	773	395
FREUD LU85M015	15"c/bld 108 tooth	180	99

We now stock Hitachi Air Nailers!

TOOLS ON SALE™

AMERICA'S LOWEST PRICED TOOLS
FREE FREIGHT TO THE
48 CONTINENTAL STATES ON EVERY ITEM

PRICES SUBJECT TO CHANGE WITHOUT NOTICE
• We reserve the right to verify that the competing price quote is offered in good faith

1993 TOOL CATALOG AVAILABLE
Call Toll-Free 1-800-328-0457 In Minn. Call (612)224-4859
FAX: (612)224-8263
CHECK • MONEY ORDER • VISA • MASTERCARD • DISCOVER

SEVEN CORNERS ACE HDW. Inc.
216 West 7th St. • St. Paul, MN 55102 • Est. 1933

Croix Air Sprayers

CX-5
Good quality-affordable
price 50 CFM
List 495.00 Sale 345.00

CX-7
Dual Filtration
60 CFM
List 695.00 Sale 475.00

CX-8
2 quart Remote Cup
60 CFM
List 895.00 Sale 610.00

CX-9
High Performance
80 CFM
List 795.00 Sale 539.00

DELTA
#34-080
10" MITRE BOX
XTRA SPECIAL
198.00

DEWALT TOOLS

DW364	7-1/4" Circ. Saw w/brake 13 A	275	145
DW945K	3/8" 12V cdls Drill Kit w/2 batt	296	169
DW944K	3/8" 9.6V cdls Drill Kit w/2 batt	277	154
DW610	1-1/2 HP 2 handle Router	270	148
DW411	1/4 sheet Palm Sander, 1.7 amp	97	58
DW100	3/8" Drill, 4 amp,0-2500 rpm,rev	116	68
DW510K	1/2" v/spd Hammer Drill w/case	298	165
DW682K	Biscuit Joiner with case	428	225
DW705	12" Compound Mitre Saw	658	358
DW615	NEW 1-1/4 HP Elect. Plge Router	290	158
DW625	NEW 3 HP Electronic Plge Router	500	275
DW675K	NEW 3-1/8" Planer with case	280	159
DW431	NEW 3 x 21 v/spd Belt Sander	320	182

PORTA NAILER

401	Porta Nailer complete	265	198
501	Face Nailer complete	255	195

WERNER LADDERS

6204	4' Fiberglass	179	65
6205	5' Fiberglass	199	75

FALL KIT SPECIALS

9852K	Porter Cable 9852 Drill Kit w/extra batt	185	
9853K	Porter Cable 9853 Drill Kit w/extra batt	185	
7335K	Porter Cable 5" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs	273	169
7336K	Porter Cable 6" var. spd Random Orbit Sndr w/case & 1 roll 100X & 150X discs	278	175
555K	Porter Cable Plate Biscuit Jointer with case & 1000 assorted biscuits	339	195
JS100K	Freud Jointer w/cs & 1000 biscuits	351	188
1581VSK	Bosch Top Handle Jig Saw with case & 30 Bosch blades	305	195
1582VSK	Bosch CLIC Barrell Grip Jig Saw with case & 30 Bosch blades	305	195
JM100KK	Ryobi Joiner w/1000 biscuits	475	242

BIESEMEYER FENCES

B-50	50" Commer. Saw Fence	329	298
T-SQUARE 52	52" Homeshop Fence	249	238
T-SQUARE 40	40" Homeshop Fence	242	208
T-SQUARE 28	28" Homeshop Fence	230	198

WEDGE SMART LEVEL

SM-PR2	2 FT Level with sensor	120	88
SM-PR4	4 FT Level with sensor	150	105
SM-PR6	78" Level with sensor	180	139
SERIES200	NEW 2FT Level with sensor		55

Msx636	FEIN Triangle Sander Kit	Sale	195
LPN672	PONY Air Palm Nailer w/glove	Sale	94.99

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#0	6"	4-1/2"	19.00	11.89	61.00
#1	10"	6"	21.76	12.89	70.65
#2	12"	8-1/2"	24.95	14.95	80.95
#3	14"	10"	31.61	18.95	104.95
#4	16"	12"	42.30	24.95	143.95

JORGENSEN STYLE 37 2-1/2" Throat 1/4"x3/4"

Item#	Jaw Length	List	Sale	Box of 6
3706	6"	9.86	6.25	34.75
3712	12"	10.92	6.75	37.75
3718	18"	12.05	7.25	40.75
3724	24"	13.16	8.19	43.75
3730	30"	14.70	9.10	49.75
3736	36"	16.05	10.19	55.75

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" Black Pipe Clamps	13.61	7.89	84.99
52	1/2" Black Pipe Clamps	11.37	6.50	69.50

BOSCH

1581VS	Top Handle Jig Saw	265	145
1582VSC	NEW CLIC Barrell Jig Saw	265	145
Bosch	Metal Case for above Jig Saws	34	32
Bosch	30 blade assortment for Jig Saws		27.99
1942	Heat Gun 600° - 900°	115	78
1272D	3" x 24" Belt Sander with bag	340	186
1273D	4" x 24" Belt Sander with bag	359	196
11-212VSR	Bulldog 3/4"SDS Rtry Drill	370	198
1347AK	4-1/2" Grinder w/case & access.	175	108
1348AE	5" Grinder 8.5 amp	209	118
1194VSR	1/2" var. speed Hammer Drill	264	145
1194VSRK	above Hammer Drill w/case	292	179
1608	5.6 amp Laminate Trimmer	154	89
1609K	Lam Installers Kit with 1609	315	175
1609KX	Deluxe Installers kit	369	209
1604	1-3/4 HP 2 Handle Router	249	137
1604K	same as above w/case & acc	299	169
1606	1-3/4 HP D-handle Router	273	172
3258	3-1/4" Planer w/blade guard	247	139
3258K	3258 Planer with steel case	273	154
3270D	3" x 21" Belt Sander with bag	270	148
1273DVS	var. spd 4" x 24" Belt Sander	380	215
1614	NEW 1HP Plunge Router	225	128
1614EVS	NEW 1-1/4HP v/spd Plge Rtr	260	149
1613	NEW 1-3/4 HP Plunge Router	290	164
1613EVS	NEW 2HP v/sp Plunge Router	330	184
1615	NEW 3 HP, Plunge Router	395	228
1615EVS	NEW 3 HP v/spd Pge Router	460	244
1632VSRK	Recip Saw 8.4A orb-v/spd	225	149
3050VSRK	9.6V cdls v/sp Drill Kit comp	256	138
3051VSRK	3050VSRK w/keyless chuck	266	145
1370DEVS	6" Random Orbit Sander	481	219
3283DVS	5" Random Orbit Sander	169	98
3283DVSK	3283DVS Kit complete	220	119

ELU BY BLACK & DECKER

Model	Description	List	Sale
3338	2-1/4 HP v/spd Plunge Router	448	255
3375	3-1/8" Univ. planer 7.2 amp	329	155
3380	Biscuit jointer with case	569	248
3339	NEW 3 HP v/sp Plunge Router	500	275

BLACK & DECKER

1166	3/8" Drill 0-2500 rpm 4 amp	105	65
1703-1	10" Mitre Saw w/73-770 blde	329	185
4011	1/4 sheet Palm Sander	86	59
79-034	Workmate 400	184	109
2694	7-1/4" Super Saw cat	260	144
2695	8-1/4" Super Saw cat	285	155

DAVID WHITE

LP6-20	Sight Level package - 20x	310	198
L6-20	Meridian Level - 20x	290	185
LT8-300	Level Transit - 26x	650	445
LT8-300P	above Level w/optical plum	769	519
LT6-900	Level Transit - 20x	389	245
ALT6-900	Automatic Level - Transit - 18x	549	385
ALTP6-900	above Level w/tripod & rod	600	438
ALP6-18HD	above Level w/tripod & rod	550	369

RYOBI SPECIALS

JP-155	6-1/8" Jointer/Planer	648	309
TS-254	10" Mitre Saw	420	209
RE600	3 HP Plunge Router	465	209
BE321	3" x 21" var. spd Belt Sander	290	138
TFD220VRK	12V cordless Drill Kit	335	172
JM100K	Biscuit Jointer w/case	453	215
BT3000	10" Table Saw	1204	545
TSS220	8-1/2" Slide Comp. Saw	966	445
DS1000	NEW Detail Sander	90	55
RS112	Palm grip Rndm Orb Sndr	90	59
AP12	NEW 12" Bench Planer	884	425
RA202	NEW 8-1/4" Bench Radial Saw	695	398
BS9000	NEW 9" Bench Band Saw	298	175
IDV26	NEW 28 Gal. Industrial Dry Vac	198	119
CSS450	NEW Oscilating Spindle Sander	298	175

LAMELLO BISCUIT JOINTERS

TOP 10	"Simply the Best"	699	559
STANDARD 10	"Professionals Choice"	499	399
COBRA	NEW Biscuit Joiner	Special	299

QUAL-CRAFT PRODUCTS

2200	Pump Jack	79	58
2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	21
2204	Workbench & rail holder combo	53	39

Buy any 6 (can be assort.) deduct 10%

2601	Wall Jack	167	114

Lots of 4 deduct additional 10%

PORTER CABLE

690	1-1/2 HP Router 8 amp	255	138
9690	690 Router with steel case	305	149
691	1-1/2 HP Router D-handle	280	149
695	1-1/2 HP Router/Shaper	390	218
696	HD Shaper Table	225	129
351	3" x 21" Belt Sander w/o bag	270	148
352	3" x 21" Belt Sander with bag	280	154
360	3" x 24" Belt Sander with bag	350	194
361	3" x 24" Belt Sander w/o bag	330	184
362	4" x 24" Belt Sander with bag	365	198
363	4" x 24" Belt Sander w/o bag	345	189
315-1	7-1/4" Top Hdle Circular Saw	220	118
9315-1	315-1 comp. w/cs & carb bld	250	139
617	7-1/4" Pushhandle Saw	220	124
9617	617 comp. w/cse & carb blde	250	142
97751	1/2" v/spd Hammer Drill w/cse	265	155
9629	Recip Saw var. speed 8 amp	265	148
9118	Porta Plane Kit 7 amp	380	209
505	1/2 sheet Pad Sander	225	118
6611	3/8" var. speed Drill 5.2 amp	210	118
6614	1/2" var. speed Drill 0-750 rpm	220	124
6615	7514 with keyless chuck	220	124
7549	Top handle Jig Saw 4.8 amp	260	145
330	Speed Block Sander 1/4 sheet	105	58
555	Plate Biscuit Jointer with case	320	168
345	8" Saw Boss 9 amp	190	102
9345	345 comp. w/cse & carb bide	220	119
9647	TIGER CUB Recip. Saw	205	117
9637	Full var/spd Recip Saw 8 amp	265	142
7519	3-1/4 HP Router 2 Handle	430	234
7518	3-1/4 HP 5 speed Router	495	272
7538	3-1/4 HP Plunge Router	430	234
7399	5.6 amp Drywall Cutout Unit	140	84
7310	5.6 amp Laminate Trimmer	160	92
97310	Laminate Trimmer Kit comp	355	197
7334	5" Random Orbit Sander	221	119
7335	5" var. spd Rndm Orbit Sndr	241	129
7336	6" var. spd Rndm Orbit Sndr	246	137
73333	NEW Dust Collection system	31	24.50
693	1-1/2 HP Plunge Router Base	315	172
6931	Plunge Router Base	125	77
7539	3-1/4HP var/spd Plunge Router	495	268
9852	12V 3/8"Drill w/cse 0-1000rpm	280	149
9853	9852 with keyless chuck	260	154
9854	12V 1/2" Drill w/cse 0-360 rpm	290	159
8500	12V battery for above drills	Sale	39

New Tools by Porter Cable

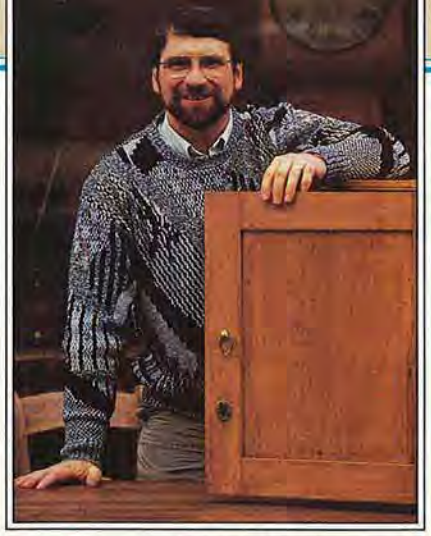
9841	9.6 volt cordless Drill Kit with 15 minute charger, battery, & case	309	174
9840	9.6 volt cordless Drill Kit with 1 hour charger, 2 batteries, & case	289	164
332	Palm Grip Rndm Orbit Sander	116	64
333	above Sander with dust bag	131	74
352VS	3x21 Belt Sander w/bag v/spd	295	165
7116	24" Omni Jig	530	294
334	333 Sander with PSA pad	131	74
550	Pocket cutter with case	330	185
7700	10" "Lazerloc" Miter Saw	634	345

FREE FREIGHT TO THE CONTINENTAL STATES ON EVERY ITEM • GIFT CERTIFICATES NOW AVAILABLE

NORM ABRAM SCHEDULES DES MOINES WOOD SHOW

Midwest fans of public television's *The New Yankee Workshop*, pick up a pencil right now and mark Saturday, September 18 on your calendars. That's when Norm Abram, the show's star, pays Des Moines a visit.

From 9 a.m. to 4:30 p.m. he'll be lecturing, answering questions, or signing autographs at his booth in the Construction, Remodeling, and Woodworking Fair, to be held at the Des Moines Convention Center. The show begins Friday, September 17 and runs through Sunday, September 19, but Abram has only scheduled the one-day appearance. Show admission costs $5 each day. For more information, call 515/278-2126.



Norm Abram, of *This Old House* and *The New Yankee Workshop* television fame, comes to Des Moines this fall.

The microwave: Woodworkers used it first

When the Ford Motor Company's Iron Mountain plant in Kingsford, Michigan, began producing bodies for the 1949 woodie station wagon, factory woodworkers faced a complex problem. How could they laminate ash and maple and at the same time shape it into a curve to match the car's cowl?

According to Keith Ashley, writing in *WOODIE TIMES*, engineers came up with the forerunner to today's microwave oven. With high-frequency electromagnetic waves generating heat in an enclosure, it glued, pressed, then softened 12 layers of wood for shaping into the complicated, compound curve.

New research says: Finish redwood right away

A common belief among redwood users is to let it "age" a month or so before applying a finish. Doing this supposedly allows extractives to dry or escape so that they won't ruin any applied coating. But new research by the Forest Products Laboratory in Madison, Wisconsin, shows that redwood need not be left unfinished for any length of time.

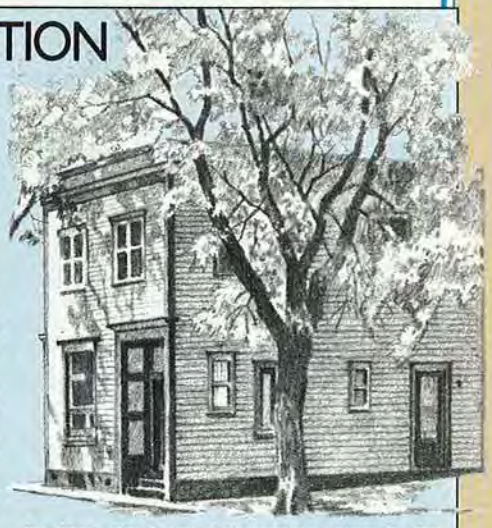
For answers concerning redwood, contact *The California Redwood Assoc., 405 Enfrente Dr., Suite 200, Novato, CA 94949 (415/382-0662).*

Illustrations: Jim Stevenson
Photograph: Richard Howard

A GRITTY ATTRACTION

Believe it or not, there's an entire museum devoted to sandpaper! It's in Two Harbors, Minnesota, an hour's drive north of Duluth along Lake Superior's ruggedly beautiful shoreline.

Dedicated to the important role that sandpaper plays in an industrialized society, the museum was the original office of the Minnesota Mining and Manufacturing Company, now known as 3-M. In it, you'll discover the story of how the company struggled to become the world's leading supplier of coated abrasives. Also on display: a 12′×12′ quilt made of different sandpaper types, a huge roll of Wetordry sandpaper large enough to cover 18 football fields, and displays of early abrasives. For more information, and museum hours, call the Lake County Historical Society, 218/834-4898.



In Two Harbors, Minnesota, stands the original office building of the 3-M company. It now houses a museum.

NOW! PLANE, MOLD, SAND and SAW with

Infinitely Variable Power-Feed!

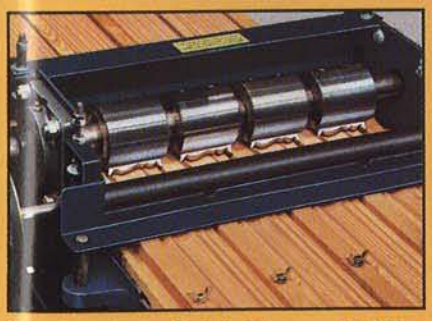
MAKES YOU MONEY... SAVES YOU MONEY!

Put this versatile power-feed tool to work in your shop . . . see how fast it pays for itself! Quickly converts low-cost rough lumber into valuable finished stock. Turns out perfect picture frame moldings, quarter-round, casing, tongue and groove . . . all popular patterns . . . any custom design.

Just a twist of the dial puts twice as many cuts-per-inch at your fingertips as any comparable planer – from 70 to over 1,000 CPI! This heavy-duty machine will sail through even the toughest oak at higher speeds, or you can slow it down to handle those "hard-to-work" pieces like curly maple, knotty cedar, burls, knees and much more! A valuable feature for molding work, where profiles make sanding impossible.

Change to Molding, Sanding or Sawing in just minutes! Unique "Morse-Taper" Quick Change Cutterhead guarantees fast changeover . . . bearings remain factory set . . . precisely aligned at all times.

Now choose from three powerful models! Woodmaster introduces the first 18″ and 25″ Planer/Molders . . . with all the features that have made the 12″ model the most versatile Planer/Molder on the market! Send for Free Facts today!



Woodmaster's Quick-Change Molding Head lets you create custom moldings from any stock. Choose from over 250 standard trim and picture frame patterns . . . or design your own!

Power-fed sanding speeds production and improves the quality of your work. No more waves or cross-grain scratches. Separate sanding head installs in just minutes.

New ripsaw attachment lets you gang-rip with power feed in a fraction of the time it takes for multiple hand-fed passes on an ordinary table saw.

MAIL TODAY OR CALL
1-800-821-6651 Ext PW64

☐ **YES!** Please rush me your FREE Information Kit plus details on your 30-DAY FREE TRIAL GUARANTEE!

Woodmaster Tools, Dept. PW64, 1431 N. Topping, Kansas City, MO 64120

NAME_____

ADDRESS_____

CITY_____

STATE_____ ZIP_____

PHONE ( )_____

Here's What Woodmaster Owners Say:

Shop Test Results–"It does an excellent job of planing, on a par with more expensive machines, and even better than some commercial models."

Editor, Workbench Magazine

Best Value–"After checking them all, Woodmaster was obviously the best deal for the money. Also, I would like to acknowledge the polite and prompt service."

E. D. Holtz, North Carolina

Craftsman's New Radials Industry Leaders Any Way You Cut It.

Dave,
See my notes.
Wow! I'm impressed with the stability of the carriage assembly. Like the new wide track design and double yoke.
CRAFTSMAN
Contractor Series
10
CRAFTSMAN
Terrific! Adjustments look easy.
Great! I see you have patent pending on new internal booted motor switch.
New guard is great. Obviously best in the industry.
Great job!
Roger

Simple and accurate alignment. Fast, visible adjustments. Unparalleled safety. Craftsman's new radial arm saws offer you breakthrough technology and old-fashioned quality.

Just how good are these new radials? Well, we've released our revolutionary new blade guard design to competing manufacturers because a design this good should be shared. And that's just one of the many impressive features we designed into our new saws.

So visit your local Sears store and check out our new radial arm saws. Or, order direct from Sears catalog. There's a saw just right for you.

CRAFTSMAN®

Only at Sears

Horsepower shown on tools is maximum developed.